

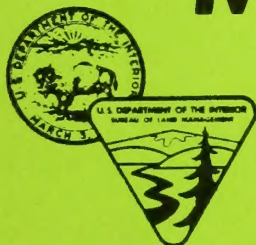
Book Cliffs

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# Final Environmental Impact Statement on the Book Cliffs Resource Management Plan



*Prepared By  
Bureau of Land Management  
November 1984*



U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT





# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
VERNAL DISTRICT OFFICE  
170 South 500 East  
Vernal, Utah 84078

IN REPLY  
REFER TO:

1792

Enclosed for your review is the final environmental impact statement (FEIS) for the Book Cliffs Resource Management Plan. This FEIS contains the proposed resource management plan, hereinafter referred to as the Proposed Plan. The Proposed Plan is a refinement of the Preferred Alternative presented in the draft environmental impact statement (DEIS) published in May 1984. The Proposed Plan is the BLM's proposed action.

All parts of this Proposed Plan may be protested. Protests should be sent to the BLM Director, Bureau of Land Management, 18th and C Streets, NW, Washington, D.C. 20240, prior to January 7, 1985--and should include the following information:

- The name, mailing address, telephone number, and interest of the person filing the protest.
- A statement of the issue or issues being protested.
- A statement of the part or parts being protested.
- A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issues were discussed for the record.
- A short concise statement explaining why the BLM State Director's decision is in error.

No sooner than the end of the 30-day protest period and after the Governor's Consistency Review, a record of decision will be issued. Approval shall be withheld on any portion of the plan under protest until final action has been completed on such protest. The record of decision will be issued no later than May 31, 1985.

Sincerely,

Lloyd H Ferguson  
District Manager

Enclosure

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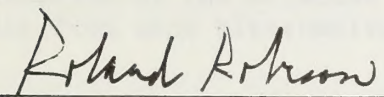
**BOOK CLIFFS RESOURCE**

**MANAGEMENT PLAN/ENVIRONMENTAL**

**IMPACT STATEMENT**

PREPARED BY

VERNAL DISTRICT  
BUREAU OF LAND MANAGEMENT  
NOVEMBER 1984

  
**UTAH STATE DIRECTOR**

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FINAL

BOOK OF THE RESERVE

MANAGEMENT PLANNING

REPORT STATEMENT

CHAPTER

SECTION

SUBJECT AND MAIN POINT

REFERENCE

TO THE

REMARKS  
TO THE  
GENERAL  
OFFICE  
OF THE  
ARMY  
DEPARTMENT  
WASHINGTON  
D.C.



COVER SHEET  
BOOK CLIFFS RESOURCE MANAGEMENT PLAN

Draft ( )      Final (X)      Environmental Impact Statement

Lead Agency - U.S. Department of the Interior, Bureau of Land Management

Cooperating Agencies - None

Type of Action - Administrative (X)      Legislative ( )

Counties That Could Be Directly Affected

Utah

Duchesne County  
Grand County  
Uintah County

Colorado

Garfield County  
Mesa County  
Moffat County  
Rio Blanco County

Abstract

The Bureau of Land Management proposes to implement a formal Resource Management Plan for the Book Cliffs Resource Area in northeastern Utah. The objectives of the plan are to provide a framework to manage all resources on public lands. This environmental impact statement (EIS) analyzes the consequences of implementing the various components of four alternatives: (1) Current Management (No-Action), (2) Resource Protection, (3) Commodity Production, and (4) Balanced Use. The alternatives recommend levels of grazing for livestock, wildlife, and wild horses; identify woodland management areas; propose management of energy development; and recommend future recreation designations. The Balanced Use Alternative has been selected as the proposed plan. <

Based on the issues and concerns identified during the scoping process, this EIS focuses on impacts to minerals and minerals development, forage, water and watershed, wildlife and wildhorses, woodlands, recreation, and socio-economics. A detailed description of the affected environment and analyses of impacts which would result from each alternative are identified in this document.

EIS Contact

Questions and comments on this EIS should be directed to:

Curtis Tucker, Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078  
Phone: (801) 789-1362

Date that the Final EIS was made available to the Environmental Protection Agency and the public: December 7, 1984







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# LIST OF AGENCIES AND ORGANIZATIONS THAT WERE MAILED COPIES OF THE FINAL EIS

## FEDERAL AGENCIES

Army Corps of Engineers  
Environmental Protection Agency  
Federal Energy Regulatory Commission  
Federal Highway Administration  
Nuclear Regulatory Commission  
U.S. Department of Agriculture  
    Forest Service  
    Soil Conservation Service  
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    National Park Service  
    Office of Surface Mining

## UTAH STATE AGENCIES

Clearinghouse  
Department of Community and Economic Development  
Department of Health  
Department of Natural Resources and Energy  
Department of Transportation  
Division of Lands  
Division of Oil, Gas, and Mining  
Division of State History  
Division of Water Resources  
Division of Wildlife Resources  
Geological and Mineral Survey  
Office of the State Planning Coordinator

## LOCAL GOVERNMENT AGENCIES

Duchesne County Commission  
Roosevelt Chamber of Commerce  
Southeastern Association of Governments  
Uinta Basin Association of Governments  
Uintah County Commissioners  
Grand County Commission  
Garfield County Commission  
Mesa County Commission  
Moffat County Commission  
Rio Blanco Commission  
Vernal Chamber of Commerce

## NONGOVERNMENT AGENCIES

American Fisheries Society  
Archeological Society of Utah  
Council on Utah Resources  
Friends of the Earth  
Intermountain Water Alliance

National Woolgrowers Association  
National Wildlife Federation  
Natural Resources Defense Council  
Rocky Mountain Oil and Gas Association  
Sierra Club  
Uintah Cattlemen's Association  
Utah Association of 4-WD Clubs  
Utah Audubon Society  
Utah Cattlemen's Association  
Utah Geological Association  
Utah Mining Association  
Utah Water Resources Council  
Utah Wilderness Association  
Utah Wildlife Federation  
Ute Indian Tribe  
Western Research Institute  
Wild Horse Organized Assistance, Inc.  
Wilderness Society  
Wildlife Management Institute  
Wildlife Society, Inc.

## EIS AVAILABILITY

Copies of this Final EIS will be available for public inspection at the BLM offices listed below:

### Washington Office of Public Affairs

18th and C Street, N.W.  
Washington, D.C. 20240  
Phone: (202) 343-4151

### Utah State Office

University Club Building  
136 East South Temple  
Salt Lake City, UT 84111  
Phone: (801) 524-3146

### Richfield District Office

150 East 900 North  
Richfield, UT 84701  
Phone: (801) 896-8221

### Moab District Office

125 West 200 South  
Moab, UT 84532  
Phone: (801) 259-6111

### Cedar City District Office

1579 North Main  
Cedar City, UT 84720  
Phone: (801) 586-2401

### Vernal District Office

170 South 500 East  
Vernal, UT 84078  
Phone: (801) 789-1362







# SUMMARY

## INTRODUCTION

The Book Cliffs Resource Management Plan (BCRA) is being prepared as required by the Federal Land Policy and Management Act in accordance with the current planning regulations (43 CFR 1600). This plan will provide for the management of all resources on public lands within the Book Cliffs Resource Area of the Vernal District, Bureau of Land Management.

## AREAS OF CONTROVERSY

A total of nine issues were identified for resolution of possible resource use conflicts: mineral development; right-of-way corridors; forage; wildlife and wild horse habitat; woodland management; recreation; fire management; watershed management; and land tenure adjustment. Although the public has expressed interest in all of these issues, a few hold the greatest potential for public controversy. The timing, procedure, and location of Federal oil shale and tar sand leasing is of particular concern to industry. The impact of any subsequent developments upon the existing natural resources, including wildlife and wild horses, is of particular concern to hunting and environmental groups. The impacts of livestock grazing upon forage and other natural resources are of particular concern to the Natural Resources Defense Council, Inc. Any adjustments in livestock grazing use are of concern to livestock operators because their livelihood could be affected. Designation of public lands for off-road vehicular use is of concern to ORV users and nonusers.

## ISSUES TO BE RESOLVED

Four alternatives have been developed to provide guidance and direction in resolving the issues in this environmental impact statement. They are the Current Management, Resource Protection, Commodity Production, and the Balanced Use Alternatives. Each of the alternatives provides a series of solutions for each of the nine issues. The alternatives differ in their emphasis on resource uses, varying between development and nondevelopment. The Current Management Alternative would be a continuation of the existing BLM management in the BCRA, which is considered as a no action alternative. The Resource Protection Alternative would emphasize maintenance or improvement of environmental quality. Commodity Production would emphasize commercial utilization of resources and the revenues which could be produced from their use. The Balanced Use Alternative would provide for the use of nonrenewable resources while protecting critical renewable resources.

## MAJOR CONCLUSIONS

Implementation of any of the four alternatives could

result in significant environmental impacts. These impacts are summarized by alternative in the following discussion.

## CURRENT MANAGEMENT ALTERNATIVE

Development of additional oil shale and tar sand resources would not be allowed under this alternative. Oil and gas leasing categories would remain as currently designated.

Approximately 61,500 acres of land within designated corridors would be subject to disturbance by rights-of-way construction.

Forage authorizations would remain unchanged. Ecological condition would improve on 490,500 acres in 12 allotments, remain unchanged on 588,400 acres in 35 allotments, and decline on 36,400 acres in 7 allotments. No forage would be authorized for wild horses. Approximately 576 animal unit months (AUMs) would be lost to mineral development.

Due to overharvest, approximately 220 acres of woodlands would be eliminated annually.

Continuation of no off-road vehicle (ORV) designations could result in nonconformance with plans of the Ute Tribe for the Hill Creek Extension. Hunter use in the Book Cliffs Resource Area would increase by 400 visitor days.

Within a decade, fire management would improve forage and wildlife habitat on 5,000 to 10,000 acres.

Watershed treatments on 10,000 acres would reduce soil loss by 64,000 tons.

## RESOURCE PROTECTION ALTERNATIVE

Development of oil shale would be considered on some 18,000 acres. Flexibility in locating up to two new oil shale tracts would be limited. In situ development would not be possible. Oil shale mining could inadvertently damage or destroy existing oil and gas facilities or gilsonite veins. Approximately 32 percent of STSAs would not be available for tar sand lease.

Approximately 46,000 acres of land within designated corridors would be subject to disturbance by rights-of-way construction.

Forage authorizations for livestock would be about 48 percent below active preference. Wildlife would be authorized a 27 percent increase. Wild horses would be authorized 2,940 AUMs above the current level of 0. Ecological condition would improve on 943,400 acres in 49 allotments and remain unchanged on 171,900 acres in 5 allotments. Approximately 1,181 AUMs would be



lost through mineral development and 1,708 AUMs would be gained from land treatments.

Habitat and forage improvements would result in increases of 503 antelope, 12,100 mule deer, 1,800 elk, and 39 wild horses. Water depletions from the White River could adversely affect two endangered fish species.

Mineral development, fire, and rights-of-way would destroy 1,700 acres of woodlands. Protection of other resource values would preclude harvest of 12,800 acres of woodlands.

Hunting would increase by **4,060** visitor days and other recreation use would increase by 2,700 visitor days. ORV restrictions would cause a loss of 575 visitor days annually. Construction within designated corridors could diminish the visual resources on 4,640 acres.

Fire management would improve forage and wildlife habitat on 15,000 acres in a decade.

Diversion of an additional 28,000 acre-feet of water from the White River would increase the total dissolved solids (TDS) concentrations at Imperial Dam by 1 milligram per liter. Watershed treatments would reduce soil loss by 711,000 tons in a decade. Mineral developments would increase soil loss by 9,900 to 19,700 tons in a decade. Floodplains would improve by an unquantifiable amount.

Acquisition of **8,700** acres of riparian and wildlife habitat would enhance the wildlife program.

Air quality standards for total suspended particulates (TSP) could be exceeded near mines and haul roads.

Due to mineral developments, the regional employment and income would increase by an unknown amount. Decreasing the authorized grazing use by 49,542 AUMs would decrease operator wealth by \$2,972,520. Increased hunting activities would increase local revenue by \$288,325. Demands on community infrastructure would increase.

## COMMODITY PRODUCTION ALTERNATIVE

Development of oil shale would be considered on some 98,000 acres and up to four new leases issued, thus giving maximum flexibility to possible oil shale development.

Oil shale development could inadvertently damage or destroy existing oil and gas facilities, gilsonite veins and building stone areas.

All public land within STSAs would be available for tar sand lease.

Approximately 174,000 acres of land within designated corridors would be subject to disturbance by rights-of-way construction.

Forage authorizations for livestock would be about 6 percent above active preference. Wildlife would be authorized 60 percent below allocated use. Wild horses

would be authorized 710 AUMs above the current allocated level of none. Ecological condition would improve on 642,300 acres in 30 allotments and remain unchanged on 472,900 acres in 24 allotments. Approximately 3,856 AUMs would be lost to mineral development and 2,700 AUMs would be gained from land treatments.

Reduced forage for wildlife would result in decreases of 309 antelope, 400 mule deer, and 146 wild horses. Water depletions from the White River would adversely affect two endangered fish species.

About 20,400 acres of woodlands would be destroyed by mineral development, rights-of-way, and wildfire. Protection of other resource values would preclude harvest of 20 acres of woodlands.

The ORV designations would result in nonconformance with plans of the Ute Tribe for the Hill Creek Extension. The ORV restrictions would cause an annual loss of 200 visitor days.

Hunting would increase by 1,560 visitor days and other recreation use would increase by 5,900 visitor days. The Musket Shot Springs developed overlook would be eliminated. Construction within designated corridors could diminish the visual resources on 13,400 acres. Water depletions from the White River would result in marginal canoeing opportunities.

Fire management would increase livestock forage and decrease wildlife habitat on 13,000 to 28,500 acres.

Diversion of an additional 56,000 acre-feet from the White River would increase the TDS concentrations at Imperial Dam by 2 milligrams per liter. Watershed treatments would reduce soil loss by 41,000 tons in a decade. In a decade, mineral developments would increase soil loss by 45,800 to 81,500 tons.

Acquisition of 10,000 acres of oil shale and tar sand lands would enhance mineral management.

Air quality standards for TSP would be exceeded. Visible discoloration would occur to the Uintah and Ouray Indian Reservation. Discoloration could also occur to the Dinosaur and Colorado National Monuments.

Due to mineral developments, the regional employment and income would increase by an unknown amount. Increasing the authorized grazing use by 7,406 AUMs would increase operator wealth by \$444,360. Increased hunting activity would increase local revenues by \$335,700. Demands on community infrastructure would increase. Traffic would increase by 16 percent and there would be an unknown increase in traffic accidents. An undetermined amount of traffic congestion and road deterioration would also occur.

## BALANCED USE ALTERNATIVE (PROPOSED PLAN)

Development of oil shale would be considered on



48,000 acres and up to four new leases issued.

Oil shale development could inadvertently damage or destroy existing oil and gas facilities, gilsonite veins, and building stone. Approximately 12 percent of STSAs would not be available for tar sand lease. Approximately 93,000 acres of land within designated corridors would be subject to disturbance by rights-of-way construction.

Forage authorizations for livestock would be about **21** percent below active preference. Wildlife would be authorized 9 percent above allocated use. Wild horses would be authorized 2,340 AUMs above the current allocation level of zero. Ecological condition would improve on 846,900 acres in 38 allotments and remain unchanged on 268,500 acres in 16 allotments. Approximately 1,858 AUMs would be lost through mineral development and 2,034 AUMs would be gained from land treatments.

Habitat and forage improvements would result in an increase of 289 antelope, 9,600 mule deer, and 1,400 elk. Reduced forage for wild horses would result in a decrease of 11 horses. Water depletions from the White River could adversely affect two endangered fish species.

Mineral developments, rights-of-way, and wildfire would destroy 5,150 acres of woodlands. Protection of other resources would preclude harvest on 4,750 acres of woodlands.

For the Hill Creek Extension, off-road vehicle designations would be consistent with plans of the Ute Tribe. The ORV restrictions would cause a loss of 500 visitor days annually. Hunting use would increase by 3,350 visitor days and other recreation use would increase by **4,200** visitor days. The Musket Shot Springs developed overlook would be **retained**. Construction within designated corridors could diminish visual resources on 6,400 acres. Water depletions from the White River would result in marginal canoeing.

Fire management would increase livestock forage and wildlife habitat on 17,000 to 27,900 acres.

Diversion of an additional 28,000 to 56,000 acre-feet of water from the White River would increase TDS concentrations at Imperial Dam by one to two milligrams per liter. Watershed treatments would reduce soil loss by 505,000 tons in a decade. Mineral developments would increase soil loss by 16,800 to 34,800 tons of soil in a decade.

Acquisition of up to **18,700** acres of **land would enhance both renewable and nonrenewable resource programs**.

Air quality standards for TSP could be exceeded. Visible discoloration could occur to the Dinosaur National Monument and Uintah and Ouray Indian Reservation.

The regional employment and income would increase by an unknown amount due to mineral developments. Decreasing the **active grazing preference** by **21,599** AUMs would decrease operator wealth by **\$1,295,940**.

Increased hunting activity would increase local revenues by \$450,450. Demands on community infrastructure would increase. Traffic would increase by 13 percent and accidents would increase by an unknown amount. An undetermined amount of traffic congestion and road deterioration could occur.

## IDENTIFICATION OF THE **PROPOSED PLAN**

The Balanced Use Alternative has been identified as the **proposed plan** because it optimizes the use of energy and other natural resources while protecting critical resources such as wildlife habitat, cultural resources, endangered and threatened species, etc.

The Current Management Alternative presented in this document is the proposed action for livestock grazing as required by the Council on Environmental Quality (CEQ). This alternative is also the "No Action" Alternative as required by BLM grazing policy (BLM Washington Office Instruction Memo 83-428).







# Chapter 1

## Purpose and Need









# CHAPTER 1

## PURPOSE AND NEED

### INTRODUCTION

This document serves two functions: it proposes a Resource Management Plan (RMP) and determines the effects of implementing the plan through an Environmental Impact Statement (EIS).

The Book Cliffs RMP is a proposed land use plan for management of all natural resources on 1.1 million acres of public lands. It complies with the Federal Land Policy and Management Act (1976), as well as other appropriate planning mandates, (43 CFR 1600) and replaces the outdated Management Framework Plans which were developed during the early 1970s. The RMP provides planning direction for resolving conflicts between competing resource uses such as minerals, recreation, wildlife, etc. Provisions for leasing additional Federal energy minerals such as oil shale and tar sand are identified in the plan. The RMP also coordinates management of the public lands with existing plans of State, and other Federal agencies, and the Ute Indian Tribe.

This EIS assesses the environmental impacts of the proposed plan and identified alternatives. It also complies with the court order (U.S. District Court, District of Columbia, *Natural Resources Defense Council, Inc., et al. v. Rogers C.B. Morton et al.*, Case No. 1983-73) to analyze the impacts of livestock grazing on the public lands. Mitigation and monitoring recommended in this EIS will be incorporated into the final RMP.

### SCOPE OF THE RESOURCE MANAGEMENT PLAN

This document discusses both present and possible future options for Federal surface and subsurface resource management in the Book Cliffs Resource Area (BCRA). State, native American, and private properties are only discussed to the extent that their management interacts with that of the Bureau of Land Management.

Lands within the Uintah and Ouray Indian Reservation, including Federal subsurface minerals, are not analyzed within this document. Inventories of the Tribally-owned surface resources are presently incomplete. Legal questions concerning access for mineral developments and adequate protection of the surface resources have also been raised by the Ute Tribe (Core 1984). After these concerns have been resolved, a planning amendment covering management of the Reservation subsurface lands administered by BLM would be prepared as an addendum to the Book Cliffs RMP.

The decisions identified in the RMP would apply to all public lands within this resource area and any lands subsequently added to it.

### INTERRELATED PROJECTS

This document assesses the environmental impacts which could result from actions approved by the BLM in the Book Cliffs Resource Area. Other projects, which have previously been approved by BLM or which could occur on non-Federal lands, have been evaluated in separate environmental documents. In this document, these projects have been identified since they would combine with the proposed BLM projects to create cumulative impacts. These cumulative impacts would only occur if all projects, both BLM and non-BLM, are actually developed concurrently.

### TIME FRAME

Based upon current regulations, the proposed plan would remain in effect until it is determined to be outdated by management. If significant changes occur in the proposed land uses of the BCRA, the plan would be amended or revised.

### DESCRIPTION OF THE STUDY AREA

The BCRA is located in northeastern Utah. It is roughly triangular in shape, bounded by the Utah Colorado state line on the east, the Book Cliffs Divide to the south, and the Green River to the north and west (Figure 1-1).

Administratively, the BCRA includes public lands and minerals that are within portions of Uintah and Grand Counties, Utah. The BCRA also includes administration of grazing allotments which overlap into Garfield, Moffat, and Rio Blanco counties in Colorado.

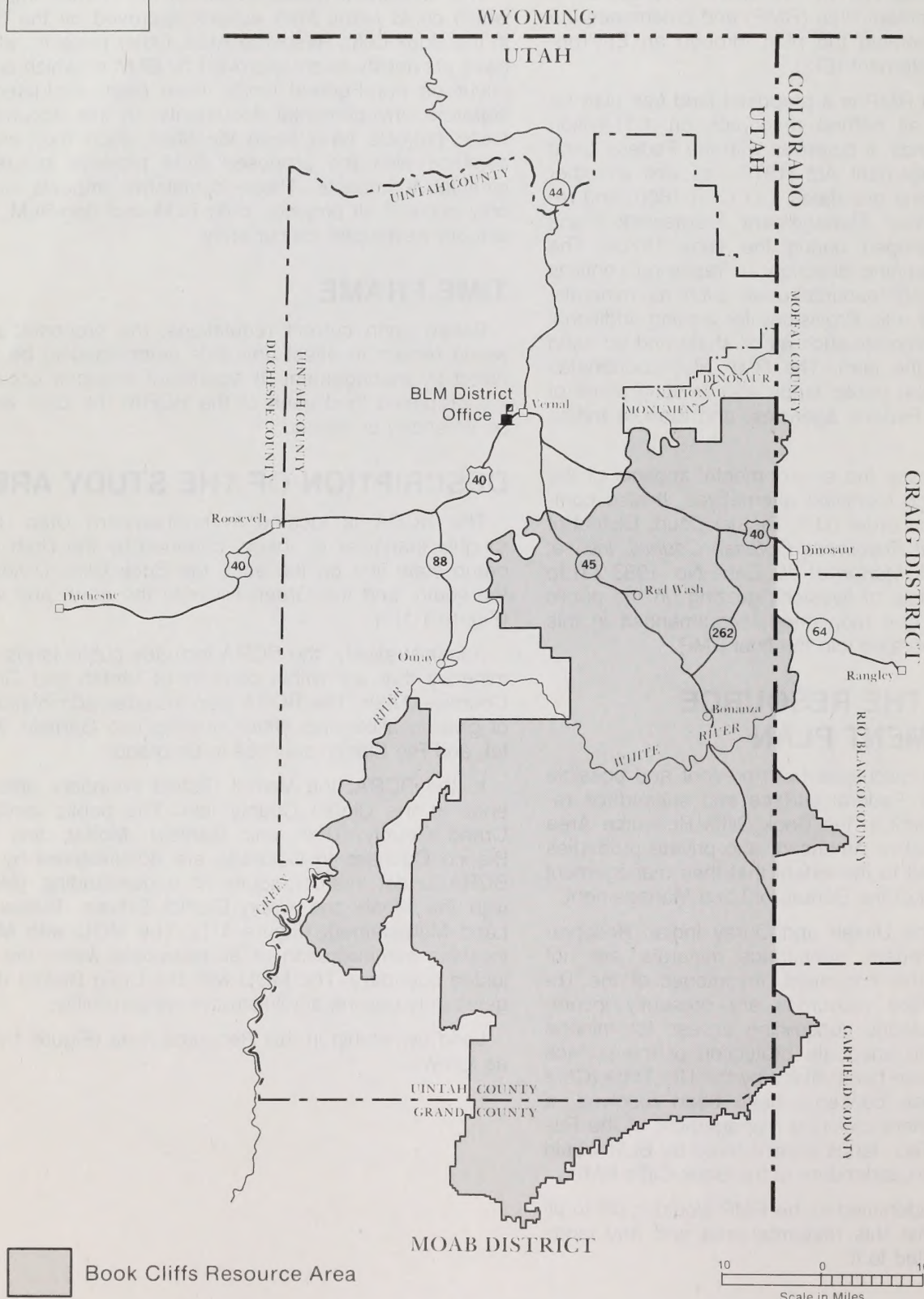
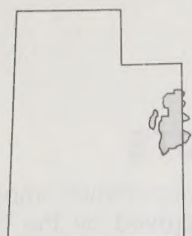
In the BCRA, the Vernal District boundary officially ends at the Uintah County line. The public lands in Grand County, Utah and Garfield, Moffat, and Rio Blanco Counties in Colorado are administered by the BCRA under memorandum of understanding (MOU) with the Moab and Craig District Offices, Bureau of Land Management (Figure 1-1). The MOU with Moab includes administration of all resources within the adjusted boundary. The MOU with the Craig District delegates only grazing administrative responsibility.

Land ownership in this Resource Area (Figure 1-2) is as follows:



# VICINITY MAP

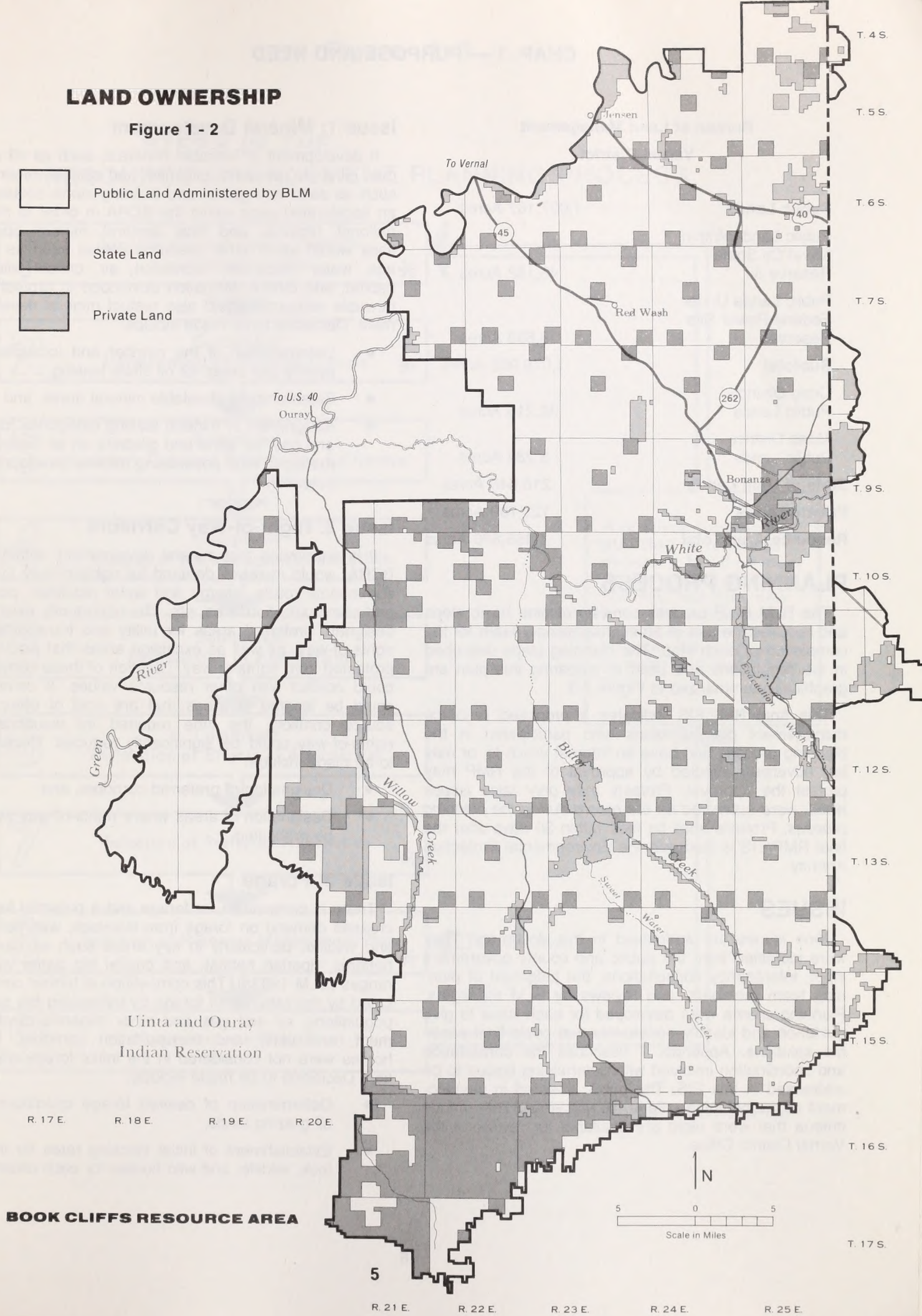
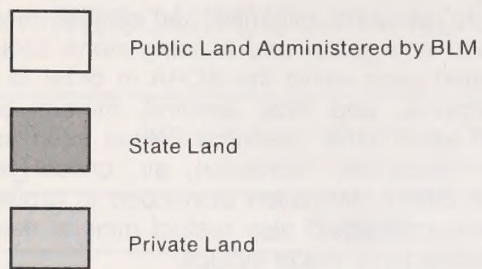
Figure 1-1





# LAND OWNERSHIP

Figure 1 - 2





## CHAP. 1 — PURPOSE AND NEED

### Bureau of Land Management

#### Vernal District

<b>Public Lands</b>	1,027,167 Acres
Public Lands Within Naval Oil Shale Reserve II	46,152 Acres
Public Lands Under Federal Power Site Reserve	6,633 Acres
<b>Subtotal</b>	1,079,952 Acres
Craig District- Public Lands	32,218 Acres
Moab District- Public Lands	3,284 Acres
<b>State of Utah Lands</b>	216,646 Acres
<b>Private Lands</b>	123,780 Acres
<b>Resource Area Total</b>	1,455,880 Acres

## PLANNING PROCESS

The BLM RMP process consists of nine basic steps and requires the use of an interdisciplinary team for the completion of each step. The planning steps described in the regulations and used in preparing this plan are graphically summarized in Figure 1-3.

This final RMP/EIS indicates a proposed resource management plan. Persons who participated in the planning process and have an interest which is, or may be, adversely affected by approval of the RMP may protest the approval. *Protests may only raise issues which were submitted for the record during the planning process.* Protests shall be filed within 30 days after the final RMP/EIS is filed with the Environmental Protection Agency.

## ISSUES

Nine issues are addressed in this document. They were identified from the public and county government input, interagency consultations, the judgment of planning team members, and reviews by BLM managers. Planning criteria were developed for each issue to give guidance and identify constraints that could limit possible solutions. Appendix 1 describes the consultation and coordination involved with determining issues to be addressed in this EIS. The public assisted in development of the planning criteria (BLM 1983a). The various criteria that were used are available for review at the Vernal District Office.

### Issue 1: Mineral Development

If development of leasable minerals, such as oil and gas, oil shale, tar sand, gilsonite, and salable minerals, such as sand and gravel and building stone occurs at an accelerated pace within the BCRA in order to meet national, regional, and local demand, mineral operations would affect other resource values such as forage, water resources, recreation, air, critical wildlife habitat, and others. Mitigation developed to protect renewable resources could also restrict mineral development. Decisions to be made include:

- Determination of the number and locations of priority use areas for oil shale leasing,
- Establishment of salable mineral areas, and
- Assignment of mineral leasing categories for oil and gas, tar sand and gilsonite on all Federally managed land possessing mineral development potential.

### Issue 2: Right-of-Way Corridors

It is anticipated that mineral development, within the BCRA, would increase demand for rights-of-way to accommodate roads, energy and water pipelines, power and communication lines, etc. The opportunity exists to designate preferred areas for utility and transportation rights-of-way, as well as exclusion areas that would be protected from rights-of-way. Location of these corridors could conflict with other resource values. If corridors could be located in areas that are void of other resource conflicts, the time required for issuance of rights-of-way could be significantly reduced. Decisions to be made include:

- Designation of preferred corridors, and
- Designation of areas where rights-of-way would be prohibited.

### Issue 3: Forage

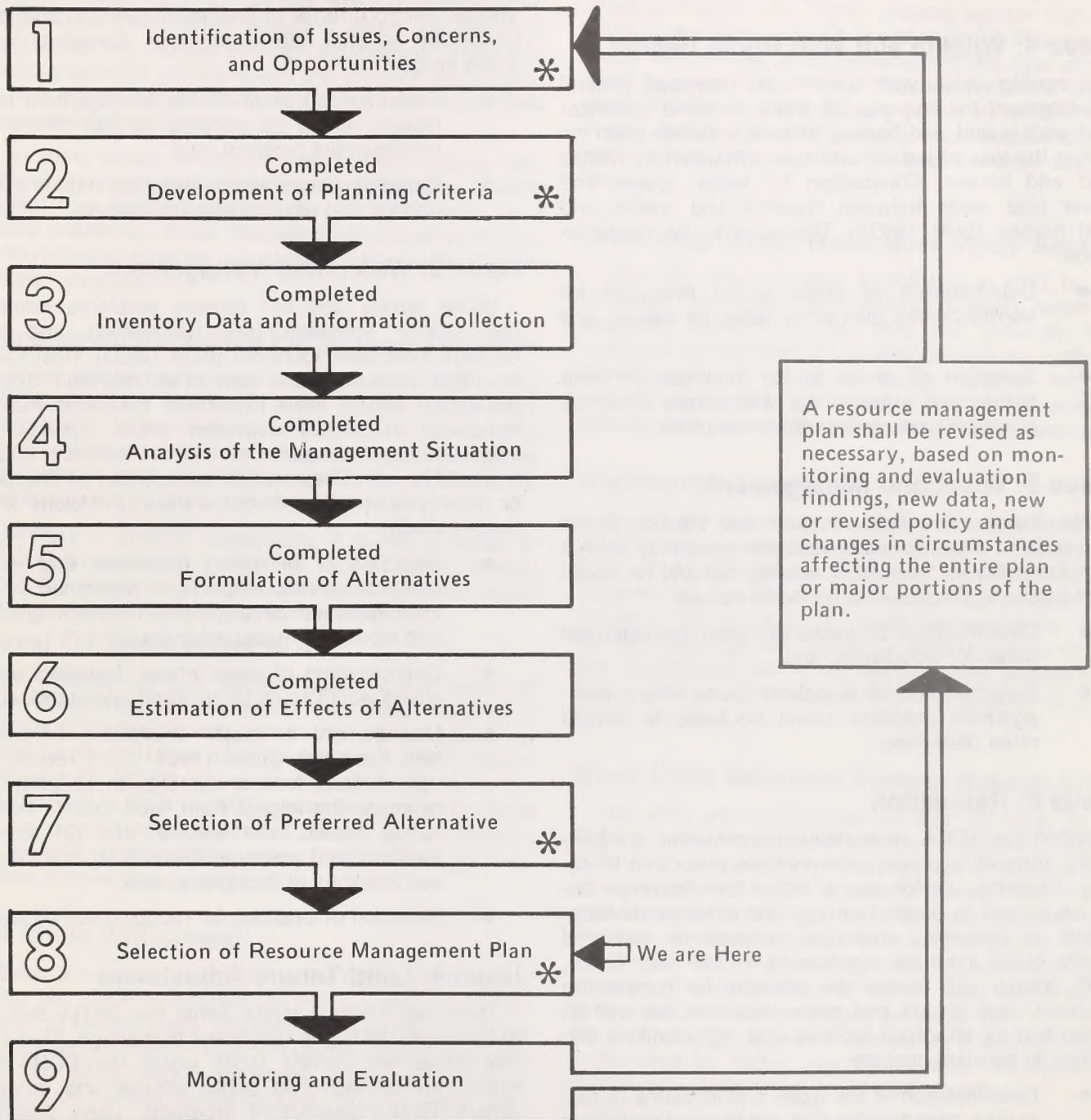
There is competition for forage and a potential for increased demand on forage from livestock, wild horses, and wildlife, particularly in key areas such as canyon bottoms, riparian habitat, and crucial big game winter ranges (BLM 1983a). This competition is further complicated by the removal of forage by increasing big game populations, oil and gas and other minerals development, and utility and transportation corridors. Wild horses were not considered in the initial forage allocation. Decisions to be made include:

- Determination of desired forage conditions on all grazing lands,
- Establishment of initial stocking rates for livestock, wildlife, and wild horses for each allotment



Figure 1-3

## STEPS IN THE RESOURCE MANAGEMENT PLANNING PROCESS



\* Steps Requiring Public Participation



with emphasis on key livestock use, wildlife habitat, and watershed areas; and

- Monitoring the effects of initial stocking rates and grazing practices on the soil and vegetation resource to determine proper stocking levels.

### Issue 4: Wildlife and Wild Horse Habitat

A conflict exists with current and proposed mineral development (oil and gas, oil shale, tar sand, gilsonite) and wildlife and wild horses. Mineral activities often result in the loss of habitat and space required by wildlife and wild horses. Competition for water, space, and cover also exists between livestock and wildlife and wild horses (BLM 1983a). Decisions to be made include:

- Determination of areas to be managed for wildlife priority over other resource values, and
- Selection of areas to be managed for wild horses and areas where wild horses would be given preference over other resources.

### Issue 5: Woodland Management

Woodlands are a finite resource and the conversion of woodland areas for other resource uses may conflict with the ability to meet an increasing demand for woodland products. Decisions to be made include:

- Determination of sustained yield management areas for woodlands, and
- Determination of woodland areas where management practices could be used to benefit other resources.

### Issue 6: Recreation

Within the BCRA, recreational opportunities are generally undeveloped and semi-primitive motorized in nature. Presently, visitor use is rather low; however, because access to support energy and minerals developments is becoming available, recreational use and needs could increase significantly in the near future. With greater use comes the potential for competition between user groups and other resources, as well as a demand for improved facilities and opportunities. Decisions to be made include:

- Determination of the types and locations of recreation opportunities that would need protection for future use, and
- Classification of the BCRA for off-road vehicle (ORV) use as opened, closed, or limited.

### Issue 7: Fire Management

With increasing development in the Book Cliffs, the risk of loss from wildfire will increase. The use of fire as a management tool to benefit wildlife and livestock, conflicts with the public's belief that all fires are bad. The annual occurrence of fires could result in both beneficial and adverse habitat alteration. Decisions to be made include:

- Determination of which fire management techniques should be adopted as part of the fire management program, and
- Determination of where these techniques will be applied and what results are desired.

### Issue 8: Watershed Management

Water quality and soil erosion problems including high salinity, sediment, gully headcutting, and flood damage have been identified (BLM 1983a). Restrictions on other resource uses can often maintain existing watershed values, while restorative measures may be necessary in already degraded areas. Springs and seeps are important water sources for livestock, wildlife, and wild horses. These water sources can be degraded or destroyed by other resource uses. Decisions to be made include:

- Selection of mitigating measures that would minimize adverse impacts to watershed values from minerals development, livestock grazing, and woodland management; and
- Determination of areas where degraded watersheds would/could be restored and stabilized;
- Management of major floodplains consistent with Executive Order 11988 to (1) reduce the risk of flood loss or damage to property; (2) minimize the impact from flood loss to human safety, health, and welfare; and (3) restore, maintain and preserve the natural and beneficial functions of floodplains; and
- Selection of locations for reducing soil erosion.

### Issue 9: Land Tenure Adjustment

There are Federal lands within the BCRA that are isolated and difficult to reach and to manage. There are also State and private lands within the BCRA that would provide improved public access and enhance various BLM management programs. Land disposals and acquisition could provide improved management of public domain. These potential land actions would result in management changes of resources involved. Decisions to be made include:

- Determination of which lands should be retained, disposed of, studied further, or acquired.



### MANAGEMENT CONCERNS

Management concerns are topics which are not considered as issues, but involve management decisions which could be made during the life of the RMP. They involve continuation of certain existing Management Framework Plan (MFP) decisions which are still valid and would not change between alternatives. They also include possible actions which are foreseen as possible in the future, but which have not yet been developed as specific proposals.

In some cases, these concerns involve resource allocation on a conceptual basis only, because a specific action has not been proposed, but is foreseen as a likely possibility. Other management concerns involve administrative changes for parcels of land such as withdrawal revocation.

### Leasing Public Lands for Support Facilities

When anticipated mineral developments occur in the BCRA, it is likely that the BLM will receive one or more applications to lease tracts of public land for support service facilities. Examples of applications could include gas stations and possibly town sites to accommodate workers in the oil shale and tar sand industry.

Without a specific application, it is not possible to analyze the potential impacts of support facility leasing upon the resources. The determination of impact would be done during future site-specific analyses.

### Naval Oil Shale Reserve II

The BCRA contains approximately 46,000 acres of land designated as the Naval Oil Shale Reserve II (NOSR II). NOSR II was created to protect certain oil shale lands for future use by the Navy (BLM 1983b) (Figure 1-4). NOSR II is presently administered by the Department of Energy (DOE), but managed by the BLM under a cooperative agreement (Evans 1984). Because of the joint administrative responsibilities, this area requires special management.

### Oil Shale Withdrawal

Extensive tracts of land within the BCRA were placed under oil shale withdrawal in 1930 (Executive Order 5327). In recent years, legislation and regulations have been enacted which could effectively protect the mineral and other natural resources, while being less restrictive on mineral developments. The oil shale withdrawal may be continued or lifted (Paugh 1984). Continuation of the withdrawals would require different management than would be needed if the withdrawals are lifted.

### Reclamation and Power Site Withdrawals

Lands adjacent to the Green River were placed under reclamation and power site withdrawals in the 1960s in anticipation of construction of hydroelectric projects (Figure 1-4). These projects appear highly unlikely today. Although not established for this purpose, these withdrawals afford protection of the river environment by precluding mining. These withdrawals may be lifted in 1984, and the areas opened to mineral entry. Revocation of these withdrawals would require different management than would be needed if they are continued.

### Boulevard Ridge Watershed Study Area

This 330-acre area was established in 1971 by BLM to study the effects of chaining on water runoff and sediment movement. The data are currently being analyzed to determine if the study should be continued. Management will need to decide whether the area would subsequently be made available for other resource uses, or be used for continued study purposes.

### Geothermal Leasing

The BCRA would remain open to lease consistent with the Geothermal Steam Act of 1970. One area, T. 4 S., R. 24 E., Salt Lake Base and Meridian (SLBM), Sections 33 and 34, has been identified as potentially valuable for geothermal steam development (BLM 1974a). Although the BCRA is considered to have a low potential for geothermal development, leasing could occur through a BLM initiative or in response to an industry proposal.

### Book Cliffs Mountain Browse Natural Area

This area was established October 29, 1968, by the BLM, to preserve a vegetation type unique to the Book Cliffs. It is composed of an association of several plant species referred to as mountain browse. The natural area has no real interest value to most recreationists. Because of the abundance of mountain browse within the BCRA, its value as a scientific study plot is questionable. The designation of natural area could be retained and the area managed primarily for its ecological and scientific values or, based on a lack of interest in the area for further scientific studies, the protective natural area designation could be dropped.

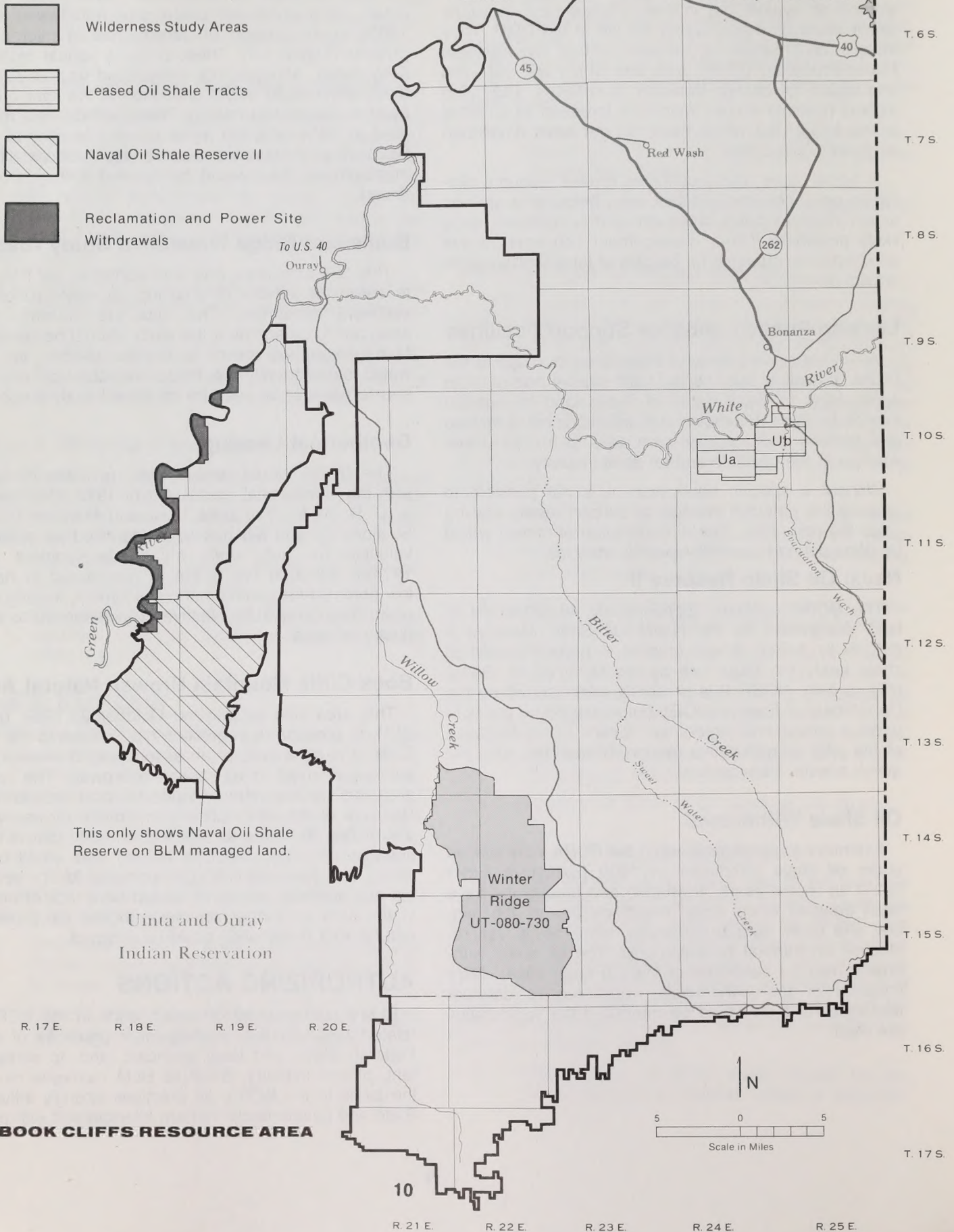
## AUTHORIZING ACTIONS

BLM's management of public lands in the BCRA is related to projects or management practices of other Federal, State, and local agencies, and, to some extent, private industry. Because BLM manages most of the lands in the BCRA, its practices strongly influence State and private lands that are interspersed with public



# **LOCATION OF WILDERNESS STUDY AREAS, NAVAL OIL SHALE RESERVE II, RECLAMATION AND POWER SITE WITHDRAWALS**

**Figure 1 - 4**





## **CHAP. 1 — PURPOSE AND NEED**

lands. Therefore, BLM needs to closely coordinate its efforts in order to meet goals and avoid resource conflicts. Appendix 2 identifies some of the major authorizing actions that would be involved with implementing the RMP.

In addition, Federal law or policy identifies several activities which, when encountered during development of an environmental assessment or EIS, require a formal consultation process with other Federal or State agencies. Appendix 2 also identifies some of the resources requiring formal consultation and the agency to be consulted.

### **CONSISTENCY REVIEW**

This plan is intended to be consistent with State and local governmental and Tribal policies, plans and programs, as provided for by regulation (43 CFR 1610.3-2). Where inconsistencies result from an alternative presented in Chapter 2, the inconsistency has been identified as a resulting impact in Chapter 4.

Prior to approval of this resource management plan, the Governor of Utah shall have 60 days in which to comment on any inconsistencies which may exist.

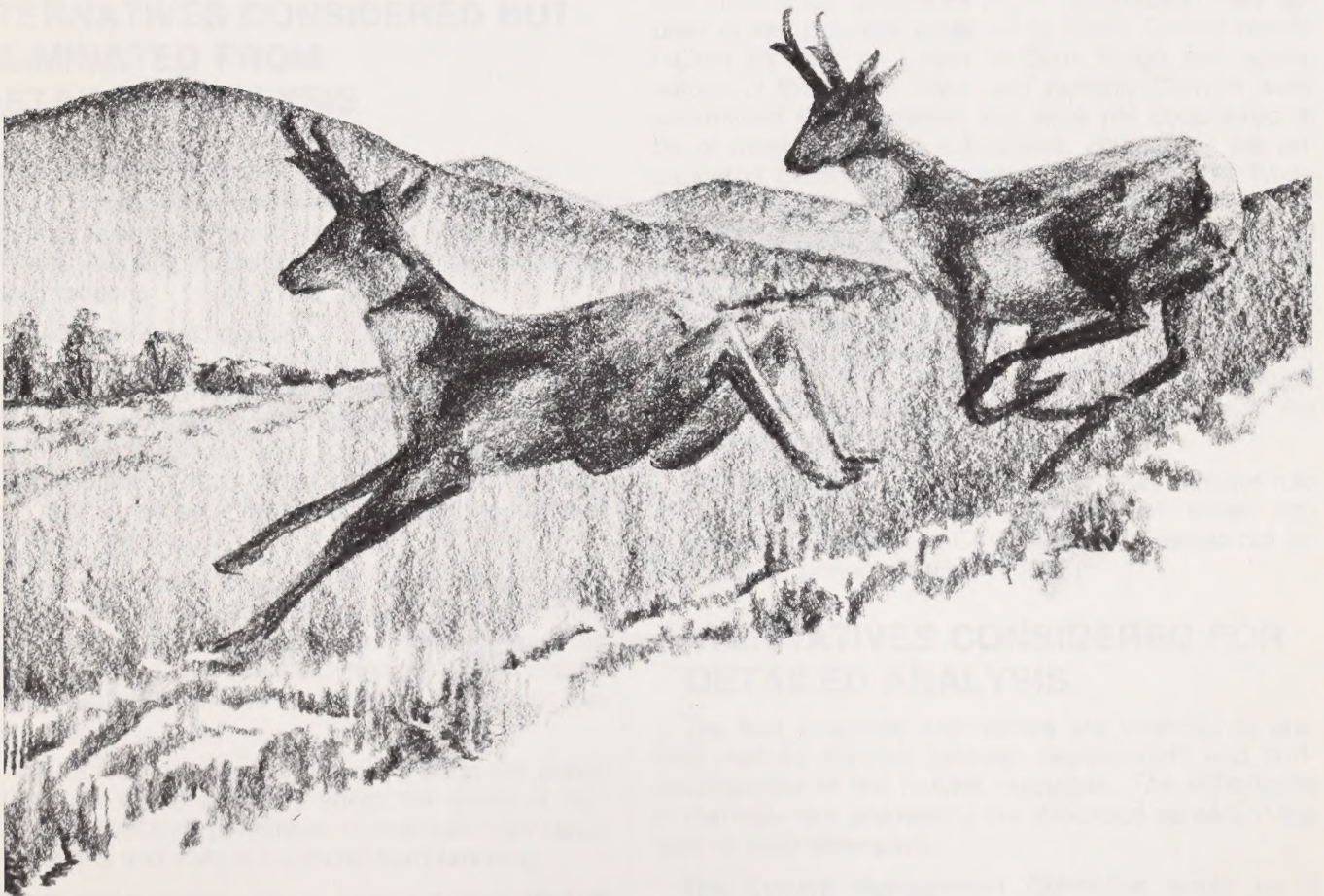






# Chapter 2

## Description and Comparison of Alternatives









## CHAPTER 2

# DESCRIPTION AND COMPARISON OF ALTERNATIVES

### INTRODUCTION

This chapter describes four resource management plan alternatives:

- Current Management (No-Action) Alternative
- Resource Protection Alternative
- Commodity Production Alternative
- Balanced Use Alternative

These alternatives and the environmental consequences of each will be used by the BLM to determine future resource management for the Book Cliffs Resource Area. The decision makers ***propose to select the Balanced Use Alternative as the final plan.*** In addition to the four alternatives, other alternatives that were initially considered during the early planning stages, but were not analyzed in this EIS, are briefly discussed.

### ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

#### No Grazing Alternative

The no grazing alternative would have eliminated all livestock grazing from public land. This alternative was considered but eliminated from detailed study for the following reasons:

1. An ecological condition inventory (BLM 1982) of the BCRA indicates that 6.5 percent of the public grazing lands are in excellent condition, 59.6 percent are in good condition, 32.6 percent are in fair condition, and 1.3 percent are in poor condition. These range conditions do not warrant a resource area wide elimination of livestock grazing.
2. An extensive program of fence construction would be required to exclude livestock from public land. Cost of exclusion fencing would be prohibitive. In addition, fencing would disrupt established wildlife movements and public access.
3. The elimination of livestock grazing on public lands would seriously affect the ability of current livestock permittees to maintain their operations and earn a livelihood from ranching.

Various management actions, including elimination of livestock grazing in critical problem areas to improve ecological conditions, are identified for each of the four alternatives. However, total elimination of livestock could not be justified as a means of improving ecological conditions on grazing lands.

#### Wilderness/ACEC Designation Alternatives

Two wilderness study areas (WSAs) are located within the BCRA: Bull Canyon WSA (UT-080-419/CO-010-001) and Winter Ridge WSA (UT-080-730) (Figure 1-4). Their suitability for wilderness designation and the impacts of designation or nondesignation will be given detailed analysis in separate documents and not in this statement. Both wilderness study areas would be managed as wilderness under the Current Management Alternative, following interim management guidelines (BLM 1979) or if legislatively approved by Congress, under a subsequent management plan as a designated wilderness area. In the event that Congress determines that the areas are not wilderness, the BLM would then implement one of the other three alternatives which include nonwilderness actions.

Another alternative would have evaluated resources within the BCRA for possible designation as Areas of Critical Environmental Concern (ACEC). The "relevance and importance" criteria for ACEC designation were applied to four potential areas (BLM 1980). Crucial wildlife habitat for deer on Lower McCook Ridge and scenic values of the White River and Fantasy Canyon were determined to be relevant but were not considered to be of more than local importance. Habitat for the endangered Colorado squawfish in the Green and White Rivers met both the relevance and importance criteria. However, appropriation of water from the rivers and management of fish species are the responsibilities of the states of Utah and Colorado. BLM is required by Executive Orders 11988 and 11990 to protect floodplains and wetlands associated with the river habitat. Additionally, in 1982, BLM required several Colorado squawfish conservation measures as conditions of the right-of-way grant for White River Dam.

BLM does not have the authority to play a major role in the management and protection of these fish species, and therefore, ACEC designation would not afford greater protection (Evans 1983).

### ALTERNATIVES CONSIDERED FOR DETAILED ANALYSIS

The four proposed alternatives are intended to provide realistic choices between development and non-development of the natural resources. The differences in management philosophy are described as part of the goal of each alternative.

The Current Management Alternative would be a continuation of the existing BLM management in the BCRA. Ongoing resource activities such as oil and gas leasing, livestock grazing, firewood cutting, watershed treatment, and off-road vehicle (ORV) use, would con-



## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

tinue at the present level. No additional oil shale or tar sand leasing would occur.

The Resource Protection Alternative would emphasize maintenance or improvement of environmental quality. While resource uses and developments would still occur, preference would be given to long-term maintenance of the natural environment. Resource trade-offs would favor protection of renewable natural resources through more restrictive stipulations and authorizations.

The Commodity Production Alternative would emphasize commercial utilization of resources and produce the greatest revenues from them. Maintenance of natural environments would continue where compatible with resource production and where mandated by law. Resource trade-offs would favor maximizing revenue and providing for human needs.

The Balanced Use Alternative would provide for the use of non-renewable resources while protecting critical renewable resource values. Resource trade-offs would provide a balance between commercial production and protection of resources. ***This alternative is BLM's proposed plan. It has been altered slightly from the preferred alternative that was presented in the Draft Environmental Statement (DEIS), based upon public comments that were received.***

### FORMULATION CRITERIA

Formulation criteria were identified and applied to all of the alternatives and provided general guidance in formulating the plan. The formulation criteria also provided aid in developing alternatives that cover a range of possible management solutions to the issues.

All alternatives will assume a continuation of oil and gas leasing, however, leasing categories may be different.

All alternatives will provide levels of protection for cultural resources, habitat for endangered or threatened species, floodplains, riparian habitat and other resources as prescribed by law or executive order.

Each alternative will provide a reasonable set of answers to the issues. All solutions will be technologically feasible and achievable within anticipated BLM budgets.

All alternatives will reflect the sustained-use principle for renewable resources.

The alternatives will display a maximum range of management practices to provide an array of different management options.

No alternatives will contain contradictory management practices which are mutually exclusive, i.e. maximization of conflicting uses.

Alternatives that provide for additional oil shale leasing will identify priority use areas that have realistic potential for economic shale oil recovery while avoiding major adverse impacts to renewable resources.

As provided by law, tar sand development shall be limited to the Special Tar Sand Areas (STSA). Competitive leasing will be limited to lands that are unleased within the STSAs.

Rights-of-way corridors will be developed using existing corridors and planning corridors. Existing corridors may be occupied by one or more rights-of-way with capability of accommodating additional rights-of-way. Planning corridors are unoccupied corridors identified as critical for future access to energy resource locations and transmission between generation sites and load centers. ***The following criteria will be used to determine whether an area is to be designated as open, limited, or closed for off-road vehicle use:***

1. ***The impact of ORV use on the resource value.***
2. ***Public input and demand for ORV use.***
3. ***Consideration for public safety.***
4. ***"Designation Criteria" as described in CFR 8342.1.***
5. ***Present and expected ORV use in an area.***

***Generally, the least restrictive designation to resolve a resource conflict will be employed.***

### DISCUSSION OF ALTERNATIVES

The specific objectives and actions necessary for implementing each of the alternatives, by issue and resource, are shown in Table 2-1. The narrative following the table is intended to clarify the action statements. Where further clarification was not necessary, no narrative was prepared. The narrative also includes a discussion of appropriate mitigation which would be adopted as part of the actions.

BLM has identified the Balanced Use Alternative as its ***proposed plan***. This alternative would be selected and implemented unless additional significant impacts or other new factors are identified through the review process. BLM proposes to ***monitor*** livestock grazing for an interim period of at least five years in a manner as described under the ***proposed plan***. This would follow current BLM grazing policy to provide additional monitoring of forage conditions and trend prior to implementing increases or reductions in livestock use.



NOTE: 7 The proposed plan contains some changes from the preferred alternative (now the Proposed Plan) that was published in the Draft EIS. The changes in the Tables and Appendixes are indicated by DOUBLE UNDERSCORED type. These changes have been made in response to public comments received during the review of the DEIS.

TABLE 2-1  
Objectives and Actions of the Alternatives

PROPOSED PLAN		Balanced Use	
Current Management	Resource Protection	Commodity Production	
MINERALS			
<u>Objective:</u>	<u>Objective:</u>	<u>Objective:</u>	<u>Objective:</u>
Oil and gas and gilson-ite would continue to be leased while other resource values would be protected or impacts mitigated. Sand, gravel, and building stone would continue to be provided to meet demand.	Lease minerals where no significant conflicts exist with other resource values.  Renewable resource values would receive preference in land use decisions.	Mineral resource values would receive preference in making land use decisions. Provide sufficient sand, gravel, and building stone to meet demand.	Oil and gas, tar sands, oil shale, and gilson-ite would be leased while other resource values would be protected or mitigated. Sand, gravel and building stone would be provided where compatible with other resource uses.
<u>Actions:</u>	<u>Actions:</u>	<u>Actions:</u>	<u>Actions:</u>
Approximately 793,000 acres would be available for lease for oil and gas under standard stipulations (Category 1), 186,000 acres would be available for lease with special stipulations (Category 2), 32,000 acres would be precluded from surface occupancy (Category 3), and 16,000 acres would not be leased (Category 4).	Approximately 473,000 acres could be available for lease for oil and gas under standard stipulations (Category 1). Approximately 470,000 acres could be available for lease using special stipulations (Category 2). Surface occupancy would be precluded from 49,000 acres (Category 3). Leases would not be issued on 8,000 acres (Category 4).	Approximately 989,000 acres would be available for oil and gas lease using standard stipulations (Category 1). Approximately 35,000 acres would be available for lease using special mitigation (Category 2). Surface occupancy would be precluded on less than 3,000 acres (Category 3). No lands would be closed to leasing (Category 4).	Approximately 552,000 acres would be available for oil and gas lease using standard stipulations (Category 1). Approximately 460,000 acres would be available for lease using special mitigation (Category 2). Surface occupancy would be precluded on 16,000 acres (Category 3). No lands would be closed to leasing (Category 4).



PROPOSED PLAN			
Current Management	Resource Protection	Commodity Production	Balanced Use
Land would be leased for gilsonite except along the Green and White Rivers.	Land would be leased for gilsonite subject to special mitigation. The special mitigation would be derived from the oil and gas category system.	Land would be leased for gilsonite subject to special mitigation. The special mitigation would be derived from the oil and gas category system.	Land would be leased for gilsonite subject to special mitigation. The special mitigation would be derived from the oil and gas category system.
No additional oil shale leasing would occur. Federal oil shale tracts U-a and U-b would continue to be leased under all alternatives.	Priority management areas totalling approximately 18,000 acres would be available for underground mining. Two tracts totalling approximately 10,500 acres could be leased in this area upon completion of the RMP. No areas would be available for in-situ development.	Priority management areas totalling approximately 84,000 acres for underground mining and 14,000 acres for in-situ development would be available for lease. Four tracts totalling approximately 21,000 acres could be located in these areas upon completion of the RMP.	Priority management areas totalling approximately 42,000 acres for underground mining and 6,000 acres for in-situ development would be available for lease. Two to four tracts totalling approximately 10,500 to 21,000 acres could be leased within these areas after implementation of the RMP.



PROPOSED PLAN			
Current Management	Resource Protection	Commodity Production	Balanced Use
No leases would be issued for tar sand development.	Combined hydrocarbon leases (competitive and conversion) would be issued subject to stipulations indicated in this document. Approximately 44,000 acres would be available for tar sand development using standard stipulations. Approximately 106,000 would require special mitigation. Surface occupancy would be precluded from 67,000 acres. Leases would not be issued on 12,000 acres within the Naval Oil Shale Reserve.	Combined hydrocarbon leases (competitive and conversion) would be issued subject to stipulations indicated in this document. Approximately 213,000 acres would be available for tar sand development using standard stipulations and an additional 4,000 acres using special mitigation. No areas would be precluded from surface occupancy. Leases would not be issued on 12,000 acres within the Naval Oil Shale Reserve.	Combined hydrocarbon leases (competitive and conversion) would be issued subject to stipulations indicated in this document. Approximately 118,000 acres would be available for tar sand development using standard stipulations. Approximately 72,000 acres would be available for development using special mitigation. Approximately 27,000 acres would be precluded from surface occupancy. Leases would not be issued on 12,000 acres within the Naval Oil Shale Reserve.
When warranted, a schedule for a competitive lease program would be developed.	When warranted, a schedule for a competitive lease program would be developed.	When warranted, a schedule for a competitive lease program would be developed.	When warranted, a schedule for a competitive lease program would be developed.
Sand and gravel sites along the Green River and south of Blue Mountain could be established on a case-by-case basis. Approximately 160 acres would be available for community or free use.	Sand and gravel would not be sold. Current community and free use areas would be closed when permits expire.	Approximately 12,500 acres would be designated as potential sand and gravel locations. Community and free use areas would be maintained in their current locations.	Approximately 8,500 acres of land would be designated as potential sand and gravel sites. The community pit and free use areas would be retained in their present locations.



PROPOSED PLAN			
Current Management	Resource Protection	Commodity Production	Balanced Use
Stone would continue to be sold from three collection areas totaling 21,500 acres.	Collection areas would be eliminated.	The Nutters Hole collection area would be enlarged to include an additional 24,500 acres. Disposals would continue from Johnson Draw and Buck Canyon areas for a total of 46,000 acres.	The Nutters Hole collection area would be enlarged to include an additional 24,500 acres. Disposal would continue from Johnson Draw and Buck Canyon areas for a total of 46,000 acres.
Approximately 25 percent of Federal lands would remain open to entry under provisions of the Mining Law of 1872, as amended. The remaining lands are under protective withdrawal and would not be open to entry.	Approximately 25 percent of Federal lands would remain open to entry under provisions of the Mining Law of 1872, as amended. The remaining lands are under protective withdrawal and would not be open to entry.	Approximately 25 percent of Federal lands would remain open to entry under provisions of the Mining Law of 1872, as amended. The remaining lands are under protective withdrawal and would not be open to entry.	Approximately 25 percent of Federal lands would remain open to entry under provisions of the Mining Law of 1872, as amended. The remaining lands are under protective withdrawal and would not be open to entry.



# PROPOSED PLAN

Balanced Use

Commodity Production

Resource Protection

Current Management

## RIGHT-OF-WAY CORRIDORS

### Objective:

Rights-of-way would be issued on a case-by-case basis while providing protection of other resource values. The location of rights-of-way would be encouraged within identified corridors, or adjacent to existing rights-of-way.

### Objective:

Rights-of-way would be restricted to designated corridors to the maximum extent practical. Renewable resource values would receive preferential consideration in locating additional rights-of-way and corridors.

### Objective:

The development of resources would be facilitated through development of a network to allow maximum flexibility in establishing rights-of-way and corridors. Additional corridors could be established in response to future rights-of-way applications. Resources producing the greatest revenue and providing for human needs would receive preference in locating corridors and rights-of-way.

### Objective:

Rights-of-way would be encouraged within identified corridors while protecting or mitigating other resource values. Additional corridors could be established if compatible with other resource uses.

### Actions:

Approximately 170 miles of corridors consisting of 61,500 acres previously identified in Management Framework Plans (MFP) and MFP amendments would be designated. Exclusion areas would not be identified.

### Actions:

Approximately 150 miles of corridors consisting of 46,000 acres would be designated. No rights-of-way would be allowed in exclusion areas. Approximately 23,000 acres of land would be designated as exclusion areas.

### Actions:

Approximately 330 miles of corridors consisting of 174,000 acres would be designated. Exclusion areas would not be identified.

### Actions:

Approximately 235 miles of corridors consisting of 93,000 acres would be designated. Rights-of-way and corridors could be allowed in exclusion areas only if adequate mitigation, reclamation, or habitat enhancement could be accomplished. Approximately 23,000 acres of land would be designated as exclusion areas.



PROPOSED PLAN		Balanced Use	
Current Management	Resource Protection	Commodity Production	
FORAGE			
<u>Objective:</u>	<u>Objective:</u>	<u>Objective:</u>	<u>Objective:</u>
Manage forage to:	Manage forage for:	Manage forage to:	Manage forage for:
A. Maintain current stocking levels and grazing practices.	A. Livestock numbers which allow fair and poor ecological condition areas to improve to good or excellent.	A. Support full live-stock grazing preference* where potential exists for improvement.	A. A level between average livestock use (of three representative years from 1975 to 1982) and active preference.
B. Maintain current level and trend of wildlife numbers.	B. Prior stable wildlife numbers.	B. Maintain present or reduced wildlife numbers.	B. Optimum wildlife numbers with minimum wildlife conflicts with livestock.
C. Maintain present wild horse numbers.	C. Maintenance of desired wild horse numbers for Bonanza and Hill Creek herds and eliminate the wild horse herd at Winter Ridge.	C. Reduce wild horse numbers at Hill Creek and eliminate wild horse herds at Winter Ridge and Bonanza.	C. Desired wild horse numbers at Hill Creek only.
Maintain existing forage and livestock facilities.	Maintain or improve the existing forage resource through range management techniques and restrictions on livestock grazing.	Improve and increase forage through range management techniques.	Maintain or improve the total forage resource using management techniques which are compatible with the use and development of other resources.

\*(Full livestock grazing preference is active grazing preference plus suspended nonuse.)



Current Management		Resource Protection		Commodity Production		PROPOSED PLAN Balanced Use	
Actions:		Actions:		Actions:		Actions:	
The following AUMs would be authorized.		The following AUMs would be authorized.		The following AUMs would be authorized.		The following AUMs would be authorized.	
A. BLUE MOUNTAIN LOCALITY		A. BLUE MOUNTAIN LOCALITY		A. BLUE MOUNTAIN LOCALITY		A. BLUE MOUNTAIN LOCALITY	
Livestock		Livestock		Livestock		Livestock	
Average Use	5,835 AUMS						
Active Pref.	5,787 AUMS						
Wildlife		Wildlife		Wildlife		Wildlife	
Average Use	1,768 AUMS						
Allocated Use	1,000 AUMS						
B. BONANZA-RAINBOW LOCALITY		B. BONANZA-RAINBOW LOCALITY		B. BONANZA-RAINBOW LOCALITY		B. BONANZA-RAINBOW LOCALITY	
Livestock		Livestock		Livestock		Livestock	
Average Use	37,352 AUMS						
Active Pref.	61,323 AUMS						
Wildlife		Wildlife		Wildlife		Wildlife	
Antelope Average Use	762 AUMS			Antelope		Antelope	
Antelope Allocated Use							
*Deer Average Use	312 AUMS						
Deer Allocated Use							
Wild horses	2,959 AUMS						
Average Use	480 AUMS						
Allocated Use	0 AUMS						
B. BONANZA-RAINBOW LOCALITY		B. BONANZA-RAINBOW LOCALITY		B. BONANZA-RAINBOW LOCALITY		B. BONANZA-RAINBOW LOCALITY	
Livestock		Livestock		Livestock		Livestock	
Average Use	37,352 AUMS						
Active Pref.	61,323 AUMS						
Wildlife		Wildlife		Wildlife		Wildlife	
Antelope Average Use	762 AUMS			Antelope		Antelope	
Antelope Allocated Use							
*Deer Average Use	312 AUMS						
Deer Allocated Use							
Wild horses	2,959 AUMS						
Average Use	480 AUMS						
Allocated Use	0 AUMS						



Current Management		Resource Protection		Commodity Production		PROPOSED PLAN Balanced Use	
C. BOOK CLIFFS LOCALITY		C. BOOK CLIFFS LOCALITY		C. BOOK CLIFFS LOCALITY		C. BOOK CLIFFS LOCALITY	
Livestock		Livestock	15,412 AUMs	Livestock	28,385 AUMs	Livestock	<u>22,137 AUMs</u>
Average Use	17,351 AUMs						
Active Pref.	23,174 AUMs						
Wildlife		**Wildlife b&f	AUMs	**Wildlife c&g	AUMs	**Wildlife d&h	AUMs
**Average Use a&e	AUMs						
Allocated Use	38,867 AUMs		0 AUMs	Wild horses	0 AUMs	Wild horses	0 AUMs
Wild horses							
Average Use	108 AUMs						
Allocated Use	0 AUMs						
D. HILL CREEK LOCALITY		D. HILL CREEK LOCALITY		D. HILL CREEK LOCALITY		D. HILL CREEK LOCALITY	
Livestock		Livestock	5,045 AUMs	Livestock	12,649 AUMs	Livestock	<u>7,987 AUMs</u>
Average Use	6,442 AUMs						
Active Pref.	12,631 AUMs						
Wildlife		**Wildlife b&f	AUMs	**Wildlife c&g	AUMs	**Wildlife d&h	AUMs
**Average Use a&e	AUMs						
Allocated Use	500 AUMs			Wild horses	710 AUMs	Wild horses	2,340 AUMs
Wild horses							
Average Use	1,881 AUMs						
Allocated Use	0 AUMs						
Totals		Livestock		Livestock		Livestock	
		Average Use		Average Use		Average Use	
		Active Pref.		Active Pref.		Active Pref.	
		Wildlife		Wildlife		Wildlife	
		Average Use		Average Use		Average Use	
		Allocated Use		Allocated Use		Allocated Use	
		Wild horses		Wild horses		Wild horses	
		Average Use		Average Use		Average Use	
		Allocated Use		Allocated Use		Allocated Use	

#### LEGEND

\*Deer herd unit 28A contains all of the land area included within the Bonanza-Rainbow, Book Cliffs, and Hill Creek localities. Data are not available to allocate the deer use on a locality basis, hence the proposed deer use is presented for each alternative by herd unit only. Each locality would receive an unknown percentage of the total herd use. BLM observations indicate that deer use would be heaviest in the Book Cliff locality and lightest in the Hill Creek locality.



PROPOSED PLAN

Current Management	Resource Protection	Commodity Production	Balanced Use
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\*\*Elk herd unit 21 contains all of the land area included within the Book Cliffs and Hill Creek localities. Data are not available to allocate the elk use on a locality basis, hence the proposed elk use is presented for each alternative by herd unit only. Each locality would receive an unknown percentage of the total herd use. BLM observations indicate that elk use would be heaviest in the Book Cliff locality and lightest in the Hill Creek locality.

\*\*\*This includes 157 AUMs Temporary Non-Renewable (TNR) previously authorized because of land treatments in an Allotment Management Plan. Refer to Appendix 5, Blue Mountain AMP.

aUnknown part of deer herd unit 28A Average Herd Use = 12,784 AUMs	bUnknown part of deer herd unit 28A Proposed Herd Use = 37,113 AUMs	cUnknown part of deer herd unit 28A Proposed Herd Use = 12,784 AUMs	dUnknown part of deer herd unit 28A Proposed Herd Use = 32,577 AUMs
eUnknown part of elk herd unit 21 Average Herd Use = 3,192 AUMs	fUnknown part of elk herd unit 21 Proposed Herd Use = 14,681 AUMs	gUnknown part of elk herd unit 21 Proposed Herd Use = 3,192 AUMs	hUnknown part of elk herd unit 21 Proposed Herd Use = 12,128 AUMs



PROPOSED PLAN		Balanced Use	
Current Management	Resource Protection	Commodity Production	
No new land treatments would be developed for livestock.	Approximately 15,000 acres would be pre-scribed burned to improve forage, and an additional 600 acres clear cut, resulting in an increase of 1,700 AUMs.	Approximately 13,000 acres would be pre-scribed burned, 15,500 acres chemically treated or burned, and 1,700 acres chained or clear cut to improve forage, resulting in an increase of approximately 2,700 livestock AUMs.	Approximately 8,050 acres would be pre-scribed burned, 10,900 acres chemically treated or burned, and 300 acres of pinyon-juniper clear cut to improve wildlife and livestock forage, resulting in an increase of approximately 2,000 AUMs.
Season of use would not change.	Spring livestock grazing would be eliminated or restricted through grazing systems or livestock decreases on 50 allotments.	Season of use would be changed in connection with grazing systems on approximately 13 allotments.	Spring grazing would be eliminated or restricted through grazing systems on approximately 28 allotments.
No new water projects would be developed for livestock.	Approximately 31 reservoirs, 14 seeps and springs, 6 guzzlers and 3 miles of pipeline would be developed for livestock. Water rights would be acquired from the State of Utah for all water projects.	Approximately 62 reservoirs, 16 seeps and springs, and 21 guzzlers and 4 miles of pipeline would be developed for livestock. Water rights would be acquired from the State of Utah for all water projects.	Approximately 64 reservoirs, 20 seeps or springs, 32 guzzlers and 3 miles of pipeline would be developed for livestock. Water rights would be acquired from the State of Utah for all water projects.
No new fences would be built.	Approximately 10 miles of new fence would be built with about 5 miles being built and maintained by BLM in order to protect critical floodplains.	Approximately 18 miles of new fence would be built.	Approximately 18 miles of new fence would be built.



PROPOSED PLAN			
Current Management	Resource Protection	Commodity Production	Balanced Use
Floodplains would be protected as required by Executive Order 11988, but no floodplains would be improved.	Livestock would be limited or restricted from 5,950 acres of floodplains to improve the sites.	Floodplains would be protected as required by Executive Order 11988, but no floodplains would be improved.	Livestock would be limited or restricted from 470 acres of floodplain to improve the sites.
Livestock would not be excluded from wildlife habitat.	Livestock would be limited from 14,000 acres of deer and elk crucial winter habitat on McCook Ridge (751 AUMs). A reduction of 2,110 livestock AUMs would provide additional wildlife forage for deer herd 26, Blue Mountain.	Livestock would not be excluded from wildlife habitat.	Livestock would not be excluded from wildlife habitat.
Continue management on 13 current AMPs. No new AMPs would be developed.	Continue current management of 3 AMPs, evaluate and revise 10 AMPs to incorporate changes in season of use, livestock limitations or restrictions, wild horse use levels and mineral development. Develop no new AMPs.	Continue current management on 6 AMPs, evaluate and revise 7 AMPs, develop new AMPs on 11 allotments.	Continue current management on 6 AMPs, evaluate and revise 7 AMPs and develop new AMPs on 11 allotments.



PROPOSED PLAN		
Current Management	Resource Protection	Commodity Production
		Balanced Use

### WILDLIFE AND WILD HORSES

<u>Objective:</u>	<u>Objective:</u>	<u>Objective:</u>	<u>Objective:</u>
Wildlife habitats would continue to be managed to maintain wildlife populations at their current, yet increasing, trend. Wild horse habitat would be managed to maintain current wild horse populations.	Wildlife habitats would be managed at prior-stable wildlife population levels. Wild horse habitat would be managed to support desired wild horse population levels at two herd locations, <u>by removing one herd.</u>	Wildlife habitats would be managed to sustain wildlife populations near or at current levels. Wild horse habitat would be managed at reduced wild horse population levels, at one herd location, <u>by removing two herds.</u>	Wildlife habitats would be managed for optimum wildlife levels where conflicts with livestock do not exist. Wild horse habitat would be managed to support desired population levels at one herd location, <u>by re-moving two herds.</u>
<u>Actions:</u>	<u>Actions:</u>	<u>Actions:</u>	<u>Actions:</u>
Provide forage to support 7,700 mule deer, 500 elk, 611 antelope, and 206 wild horses.	Provide forage to support 19,800 mule deer, 2,300 elk, 1,114 antelope and 245 wild horses.	Provide forage to support approximately 7,300 mule deer, 500 elk, 302 antelope, and 60 wild horses.	Provide forage to support approximately 17,300 deer, 1,900 elk, 900 antelope, and 195 wild horses.
A total of 18,506 AUMs would be utilized by big game and 2,469 AUMs by wild horses.	A total of 55,597 AUMs would be utilized by big game and 2,940 AUMs by wild horses.	A total of 17,287 AUMs would be utilized by big game and 710 AUMs by wild horses.	Approximately 47,596 AUMs would be utilized by big game and 2,340 AUMs by wild horses.



## PROPOSED PLAN

Current Management	Resource Protection	Commodity Production	Balanced Use
Habitat for deer herd unit 26 (Blue Mountain) would be managed to support current levels. Habitat for deer herd unit 28A (Book Cliffs) would be managed to support increasing levels.	Habitat for deer herd unit 26 (Blue Mountain) would be managed to support slightly increased levels. Habitat for deer herd unit 28A (Book Cliffs) would be managed to support prior-stable levels.	Habitat for deer herd unit 26 (Blue Mountain) would be managed to support a significantly reduced level. Habitat for deer herd unit 28A (Book Cliffs) would be managed to support current levels.	Habitat for deer herd unit 26 (Blue Mountain) would be managed to support current levels. Habitat for deer herd unit 28A (Book Cliffs) would be managed to support significantly increased levels.
Antelope habitat would be managed to support slowly increasing levels at both the Bonanza and East Bench herd locations.	Antelope habitat would be managed to support objective (prior-stable) levels at both the Bonanza and East Bench herd locations.	Antelope habitat would be managed to support the current level at the East Bench herd location, and at a reduced level at the Bonanza location.	Antelope habitat would be managed to support increased levels at both the Bonanza and East Bench herd locations.
Approximately 5,000 to 10,000 acres of browse would be burned, but no acreage of pinyon/juniper chained or clearcut. Over the next decade, approximately 10 to 30 water projects would be developed for wildlife.	Approximately 15,000 acres of browse would be burned, and 1,000 acres of pinyon/juniper chained or clearcut. Over the next decade, approximately 70 to 150 water projects would be developed for wildlife.	No habitat would be burned or chained for wildlife. Over the next decade, approximately 1 to 20 water projects would be developed for wildlife.	Approximately 9,000 acres of browse would be burned, and 2,000 acres of pinyon/juniper chained or clearcut. Over the next decade, approximately 50 to 100 water projects would be developed for wildlife.
No habitat management plans (HMPs) would be developed.	Four HMPs would be prepared.	Four HMPs would be prepared.	Four HMPs would be prepared.
No wild horse management plans would be developed.	Two wild horse management plans would be prepared.	One wild horse management plan would be prepared.	One wild horse management plan would be prepared.



PROPOSED PLAN  
Balanced Use

Commodity Production

Resource Protection

Current Management

WOODLANDS

Objective:

Provide woodland products to meet demand. Preserve forest species to benefit other resource values.

Objective:

Provide woodland products on a sustained yield basis where compatible with protection of other resource values. Preserve forest species to benefit other resource values.

Objective:

Maximize utilization of woodland products. Practice sustained yield on those areas where woodland management is determined to be the most economical use of the land.

Objective:

Provide woodland products where minimal conflicts with other resources exist. Encourage utilization of woodland products from lands that would be converted to other resource uses.

Actions:

Approximately 35,300 acres of productive woodland would be available for harvest. Amount harvested would depend on demand.

Actions:

Approximately 32,700 acres would be maintained on a sustained yield basis, with an allowable cut of 3,470 cords/year.

Actions:

Approximately 31,100 acres would be managed on a sustained yield basis, with an allowable cut of 3,730 cords/year.

Actions:

Approximately 39,600 acres would be managed on a sustained yield basis, with an allowable cut of 4,270 cords/year.

Species      Acres

Pinyon/Juniper 35,300  
Cottonwood 0  
Douglas fir 0

Species

Acres

Pinyon/Juniper 32,700  
Cottonwood 0  
Douglas fir 0

Species

Acres

Pinyon/Juniper 26,800  
Cottonwood 300  
Douglas fir 4,000

Species

Acres

Pinyon/Juniper 37,300  
Cottonwood 300  
Douglas fir 2,000



PROPOSED PLAN

Current Management	Resource Protection	Commodity Production	Balanced Use
RECREATION			
<p><u>Objective:</u></p> <p>Protect all currently identified recreation sites, scenic overlooks, travel corridors having recreational values, and recreational qualities of the river corridors, while allowing continued ORV use without immediate designation.</p>	<p><u>Objective:</u></p> <p>Protect all currently identified recreation sites, scenic overlooks, travel corridors having recreational values, and scenic and recreational qualities of the river corridors, by limiting or prohibiting ORV use.</p>	<p><u>Objective:</u></p> <p>Protect the highest quality recreation sites, scenic overlooks and portions of the Green River corridor, where compatible with resource development. Allow open ORV use except where conflicts occur with resource development.</p>	<p><u>Objective:</u></p> <p>Protect the high quality recreation sites, overlooks, and scenic corridors. Protect or mitigate recreational values of the Green and White River corridors. Designate as much land as possible open for ORV use, while protecting areas where damage to resource values would occur.</p>
<p><u>Actions:</u></p> <p>No ORV designations would be made until 1987. RMP would be amended to accommodate ORV designation.</p> <p>Continue protection of 15 campsites (895 acres), 6 scenic overlooks (730 acres), and 1 geologic feature (60 acres).</p>	<p><u>Actions:</u></p> <p>The following ORV designations would be made:</p> <p>Open 369,900 acres  Limited <u>643,200</u> acres  Closed <u>67,200</u> acres</p> <p>Continue protection of 13 campsites (785 acres), 6 scenic overlooks (730 acres), and 1 geologic feature. Add protection of one new geologic feature and expand 1 existing scenic overlook by 160 acres.</p>	<p><u>Actions:</u></p> <p>The following ORV designations would be made:</p> <p>Open 931,840 acres  Limited 147,200 acres  Closed 960 acres</p> <p>Continue protection of 4 camp sites (280 acres), 1 scenic overlook (320 acres), and 1 geologic feature (60 acres).</p>	<p><u>Actions:</u></p> <p>The following ORV designations would be made:</p> <p>Open 526,000 acres  Limited <u>547,600</u> acres  Closed 6,400 acres</p> <p>Continue protection of 5 camp sites (320 acres), 2 scenic overlooks (<u>330</u> acres), and 1 geologic feature (60 acres).  Add protection of 1 new geologic feature (10 acres) and expand 1 existing scenic overlook by 160 acres.</p>



PROPOSED PLAN		Balanced Use	
Current Management	Resource Protection	Commodity Production	
Maintain the Highway 40 scenic corridor (5,440 acres).	Expand the Highway 40 scenic travel corridor by 4,760 acres. Add 2 additional scenic travel corridors: Book Cliffs Divide (4,100 acres) and new Bonanza Highway (3,300 acres).	There would not be any scenic corridors.	Same as Resource Protection Alternative.
The White River Canyon would be protected excluding the approved dam and 2 utility corridors (5,250 acres).	Same as Current Management Alternative.	The White River Canyon would not be a recreation corridor.	Same as Current Management Alternative.
Segments of the Green River would be protected or partially protected as follows:  Partially Protected - 5,250 Protected - 9,150	Segments of the Green River would be protected or partially protected as follows:  Partially Protected - 3,500 Protected - 10,900	Segments of the Green River would be protected or partially protected as follows:  Partially Protected - 12,500 Protected - 1,900	Segments of the Green River would be protected or partially protected as follows:  Partially Protected - 4,930 Protected - 9,470
The Book Cliffs Mountain Browse Natural Area would be managed to protect and maintain the vegetation in a natural condition.	Same as Current Management Alternative.	The natural area designation would be dropped and the area opened to livestock grazing and mineral development.	Same as Current Management Alternative.



PROPOSED PLAN			
Current Management	Resource Protection	Commodity Production	Balanced Use
FIRE MANAGEMENT			
<u>Objective:</u> Extinguish all wildfires and utilize a limited prescribed burn programs to benefit other resources.	<u>Objective:</u> Extinguish all wildfires where they conflict with other resource values. Allow other areas to burn where no conflicts exist.	<u>Objective:</u> Utilize all fire management techniques to maximize commodity production throughout the BCRA. Employ prescribed burning to benefit other resource values.	<u>Objective:</u> Utilize fire as a resource management tool, employing prescribed burning, modified, and full suppression techniques. Resource trade-offs would be made.
<u>Actions:</u> Full suppression would be employed on 1,070,000 to 1,075,000 acres. A modified suppression program would not be utilized.	<u>Actions:</u> Full suppression would be employed on 84,500 acres. Modified suppression would be employed on 965,500 acres.	<u>Actions:</u> Full suppression would be employed on 84,500 acres. Modified suppression would be employed on 967,000 to 982,500 acres.	<u>Actions:</u> Full suppression would be employed on 84,500 acres. Modified suppression would be employed on 967,600 to 978,500 acres.



PROPOSED PLAN			
Current Management	Resource Protection	Commodity Production	Balanced Use

### WATERSHED

<u>Objective:</u>	<u>Objective:</u>	<u>Objective:</u>	<u>Objective:</u>
Protect floodplains, severe and critical erosion areas, the watershed study area, public water reserves, water rights, and water quality from adverse impacts through mitigation allowing development of other resources.	Protect floodplains, public water reserves, and water quality by restricting or eliminating critical surface disturbing activities in those areas. Protect the watershed study area. Mitigate adverse impacts to severe and critical erosion areas. Restore degraded water quality, floodplains, and severe and critical erosion areas.	Mitigate adverse impacts to floodplains, public water reserves, water quality, and severe and critical erosion areas. Restore only those degraded areas that would improve forage and water production and not conflict with mineral development.	Protect floodplains, public water reserves, water quality, severe and critical erosion areas, and the watershed study area, by restricting or mitigating surface disturbance. Restore degraded areas compatible with other resource uses.
<u>Actions:</u>	<u>Actions:</u>	<u>Actions:</u>	<u>Actions:</u>
Maintain Boulevard Ridge Watershed Study Area.	Maintain Boulevard Ridge Watershed Study Area for 10 years.	Discontinue Boulevard Ridge Watershed Study Area.	Maintain Boulevard Ridge Watershed Study Area as long as it serves a scientific purpose.
Implement watershed treatment measures on small areas up to a total of 10,000 acres.	Implement watershed treatment measures on areas up to a total of 111,100 acres.	Implement watershed treatment measures on small areas up to a total of 6,400 acres.	Implement watershed treatment measures on areas up to a total of 78,900 acres.



PROPOSED PLAN

Current Management	Resource Protection	Commodity Production	Balanced Use
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LAND TENURE ADJUSTMENTS

Objective:

Land disposal actions would be considered on a case-by-case basis where such actions would not conflict with existing resource management programs. Exchanges and land acquisitions that would improve management opportunities for resource protection, resource development, or administration of public lands, would be considered.

Actions:

Approximately 1,360 acres of land would be made available for disposal through exchange or sale.

No land would be delineated for potential acquisition.

Objective:

The land disposal program would be managed with overall emphasis on retention of public lands. Exchanges and land acquisitions, that would provide protection of renewable resources, would be considered.

Actions:

No land would be identified for disposal.

Approximately 8,700 acres of land (important wildlife habitat) could be acquired if opportunities become available.

Objective:

Land would be made available for community, economic, and agricultural needs. Disposal of isolated tracts that are difficult to manage would be considered. Exchanges and land acquisitions that benefit development of oil shale and tar sand resources, would be considered.

Actions:

Approximately 16,000 acres of land could be made available for disposal through exchange or sale.

Approximately 10,000 acres of land could be acquired if opportunities become available.

Objective:

Land disposals would be provided on a limited basis where community, economic, and agricultural needs outweigh retaining the land in public ownership. Exchanges and land acquisitions would be considered which would improve management opportunities for resource protection, resource development, or administration of public lands.

Actions:

Approximately 16,570 acres of land could be made available for disposal through exchange or sale.

Approximately 18,700 acres of land could be acquired for wildlife habitat and recreation management if opportunities become available.



### CURRENT MANAGEMENT ALTERNATIVE

#### Leaseable Minerals

##### Oil and Gas.

Land for oil and gas development would continue to be leased under the existing oil and gas category system (Appendix 4: Specialized Mineral Terminology. The Resource Area is divided into four categories. Category 1 areas are leased under standard oil and gas stipulations, Category 2 areas have special mitigation developed to protect critical resource values which cannot be adequately protected through the standard stipulations. Surface occupancy is not allowed on Category 3 areas, and Category 4 areas are not leased.

Resource values totalling 186,000 acres and requiring special mitigation for protection (Category 2) would include: Critical antelope, deer, elk, and wild horse range, sage grouse leks, and severe winter condition areas. Also included are perennial streams, floodplains and wetlands, springs and seeps, and the scenic corridor along U.S. Highway 40.

Surface occupancy would not be allowed on 32,000 acres (Category 3) in order to protect: Public water reserves, Boulevard Ridge Watershed Study Area, the White River, portions of the Green River, lands adjacent to Dinosaur National Monument, inventoried recreation sites, the Book Cliffs Natural Area, and significant archaeological sites.

The 16,000 acres of no lease land (Category 4) include: A few miles along the Green River, key recreation areas, scenic lands adjacent to Dinosaur National Monument, and oil shale tracts U-a and U-b, (Figure 2-1). The Naval Oil Shale Reserve and power site withdrawals (53,000 acres) are not available for lease under any alternative (Figure 1-4). All other lands are open for leasing under standard lease stipulations (Category 1).

Standard mitigating measures are contained in 43 CFR 3570. This information is commonly reported by the lessee in the 13 point surface use plan as part of every oil and gas lease. An 'on site' inspection is conducted in relation to the surface use plan to determine the most feasible and environmentally acceptable area for well sites, access roads, and other proposed surface use areas.

Special mitigating measures, such as seasonal restrictions, are listed in the wildlife, watershed, and recreation sections.

##### Oil Shale.

Two Federal oil shale tracts, U-a and U-b, are currently being developed by the White River Shale Corpo-

ration (Figure 1-4). No additional Federal leasing of oil shale would be anticipated under this alternative. Companies such as Paraho, Syntanna, Tosco, Magic Circle, and Geokinetics, have oil shale ventures in the area on land leased through the State of Utah (BLM 1982).

##### Tar Sand.

No development of tar sand deposits would be allowed. Leasing of combined hydrocarbons (tar sand), by either conversion application or competitive bidding, would not be approved even though conversion applications have been submitted (Figure 2-2).

#### Salable Minerals

##### Sand and Gravel.

New sites could be established along the southeast side of the Green River and south of Blue Mountain or in other locations on a case-by-case basis as the need arises (Figure 2-3). The community sand and gravel pit adjacent to the Green River would be retained in its current location. Disposals would continue in free use permit areas next to the Green River until supplies are depleted or permits expire.

##### Building Stone.

Building stone would continue to be sold from the Buck Canyon, Johnson Draw, and Nutters Hole collecting areas (Figure 2-4).

#### Right-of-Way Corridors

The proposed corridors for this alternative have been identified in Management Framework Plans (MFP) and MFP amendments and are shown in Figure 2-5.

A "right-of-way corridor" (or corridor) is a linear strip of land identified as having certain land use, environmental, engineering, and economic advantages for the present or future location of one or more transportation or utility rights-of-way. This designation could minimize or restrict to given areas the environmental impacts that result from unplanned rights-of-way. A corridor is considered to be a "preferred" area for future rights-of-way; it does not preclude the area from other types of activities.

##### Forage

Forage related actions for this alternative are outlined by allotment Appendix 5 (Forage Actions by Alternative) and are discussed as follows.

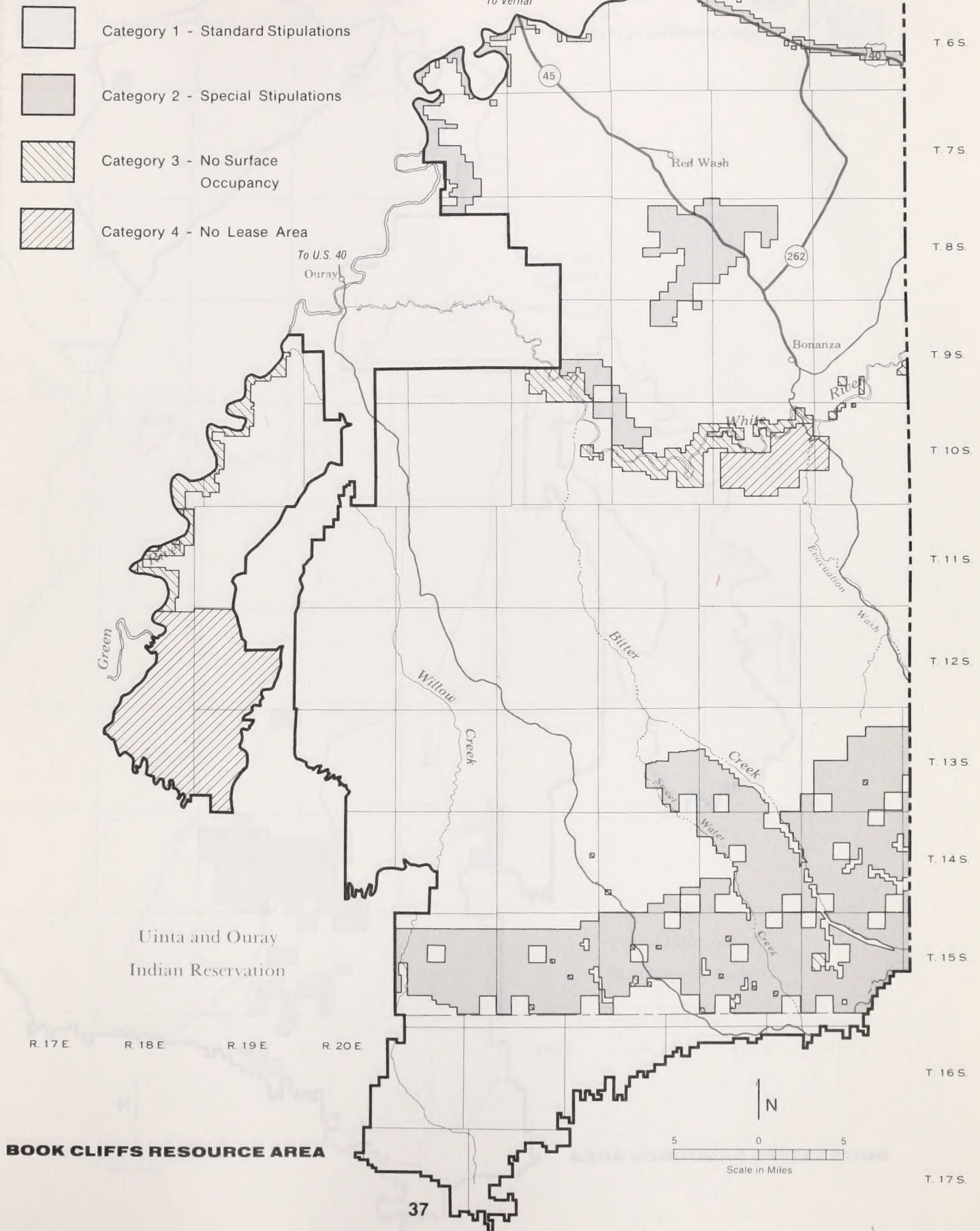
##### Grazing Practices.

Stocking levels, seasons of use, the kind and class of livestock and grazing pattern (including 13 existing



# **OIL AND GAS LEASING CATEGORIES (CURRENT MANAGEMENT ALTERNATIVE)**

**Figure 2 - 1**



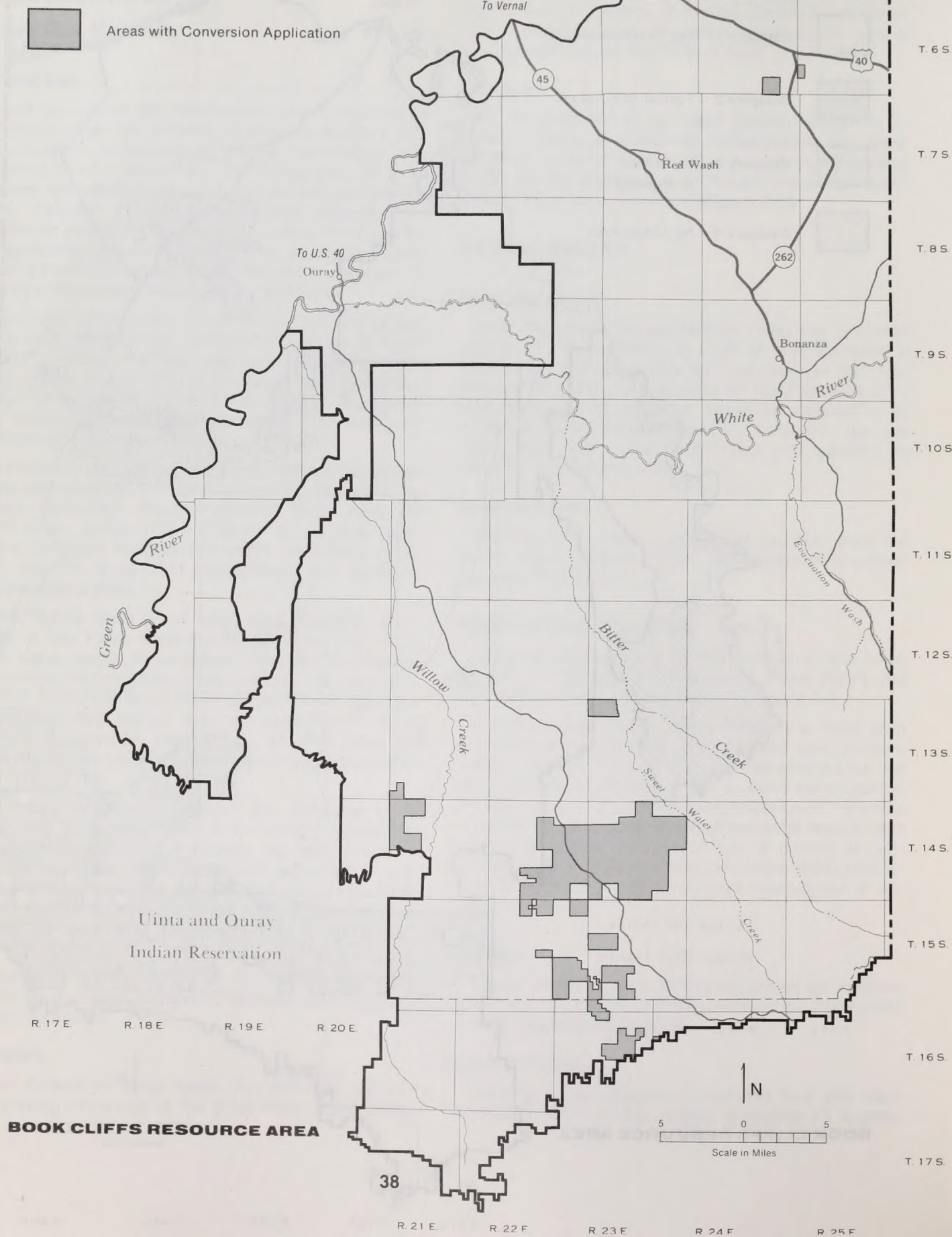


# AREAS WITH APPLICATION TO CONVERT EXISTING OIL AND GAS LEASES TO COMBINED HYDROCARBON LEASES

Figure 2 - 2



Areas with Conversion Application



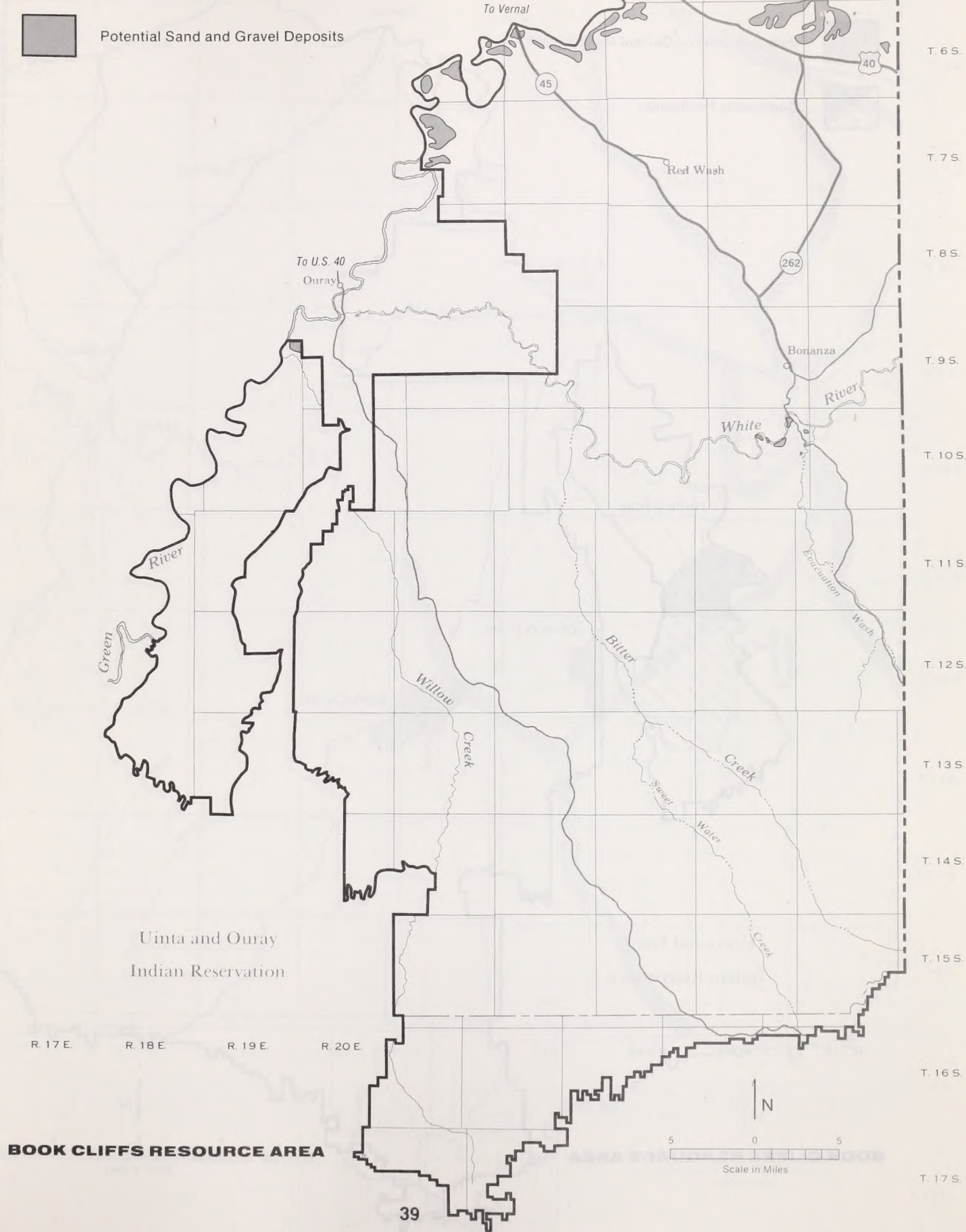


# **SAND AND GRAVEL AREAS (CURRENT MANAGEMENT, BALANCED USE ALTERNATIVES)**

Figure 2 - 3



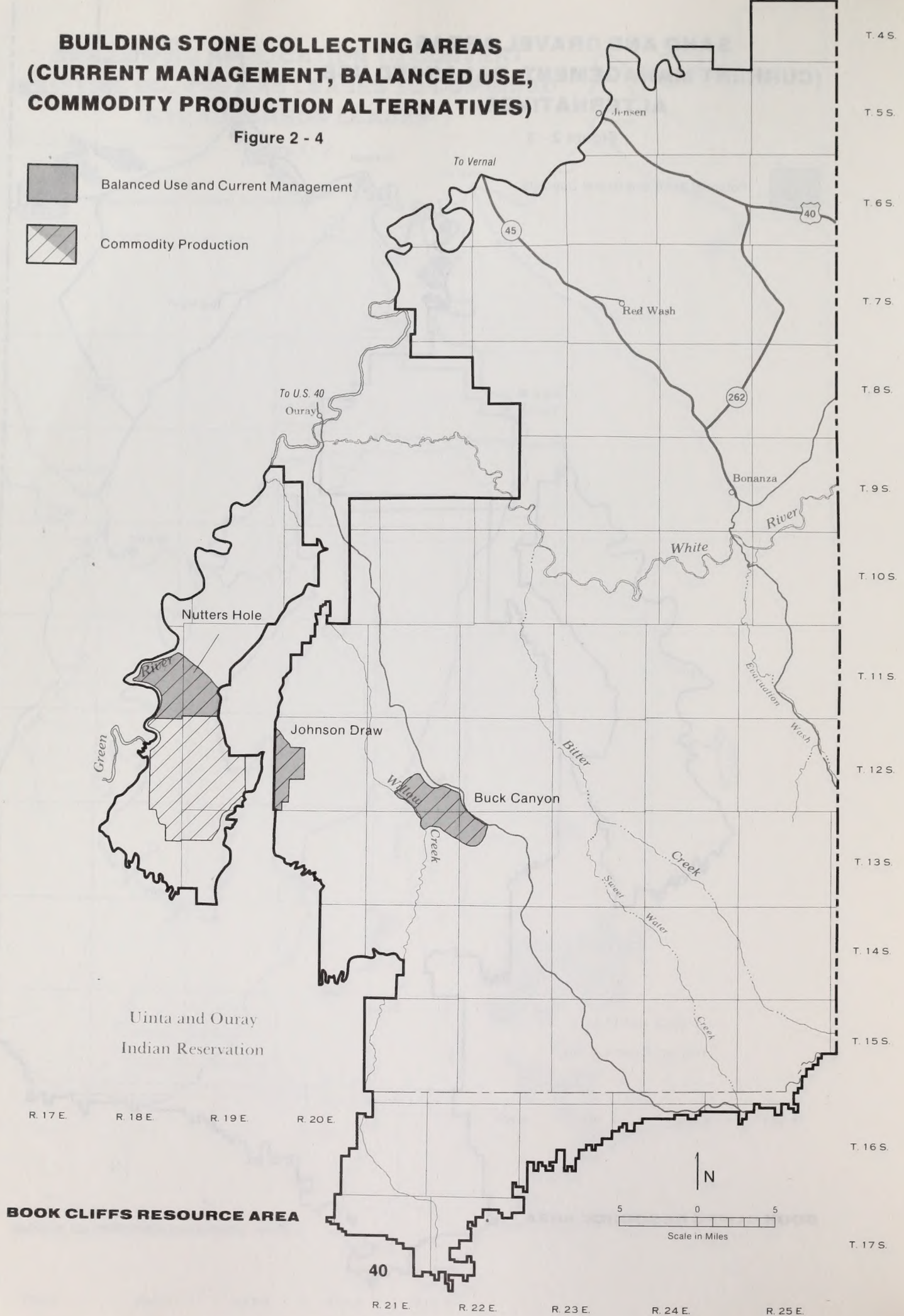
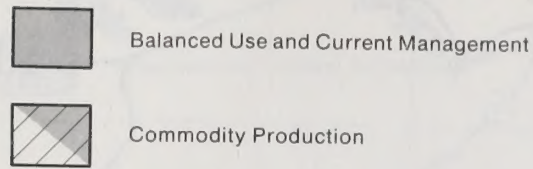
Potential Sand and Gravel Deposits





# BUILDING STONE COLLECTING AREAS (CURRENT MANAGEMENT, BALANCED USE, COMMODITY PRODUCTION ALTERNATIVES)

Figure 2 - 4



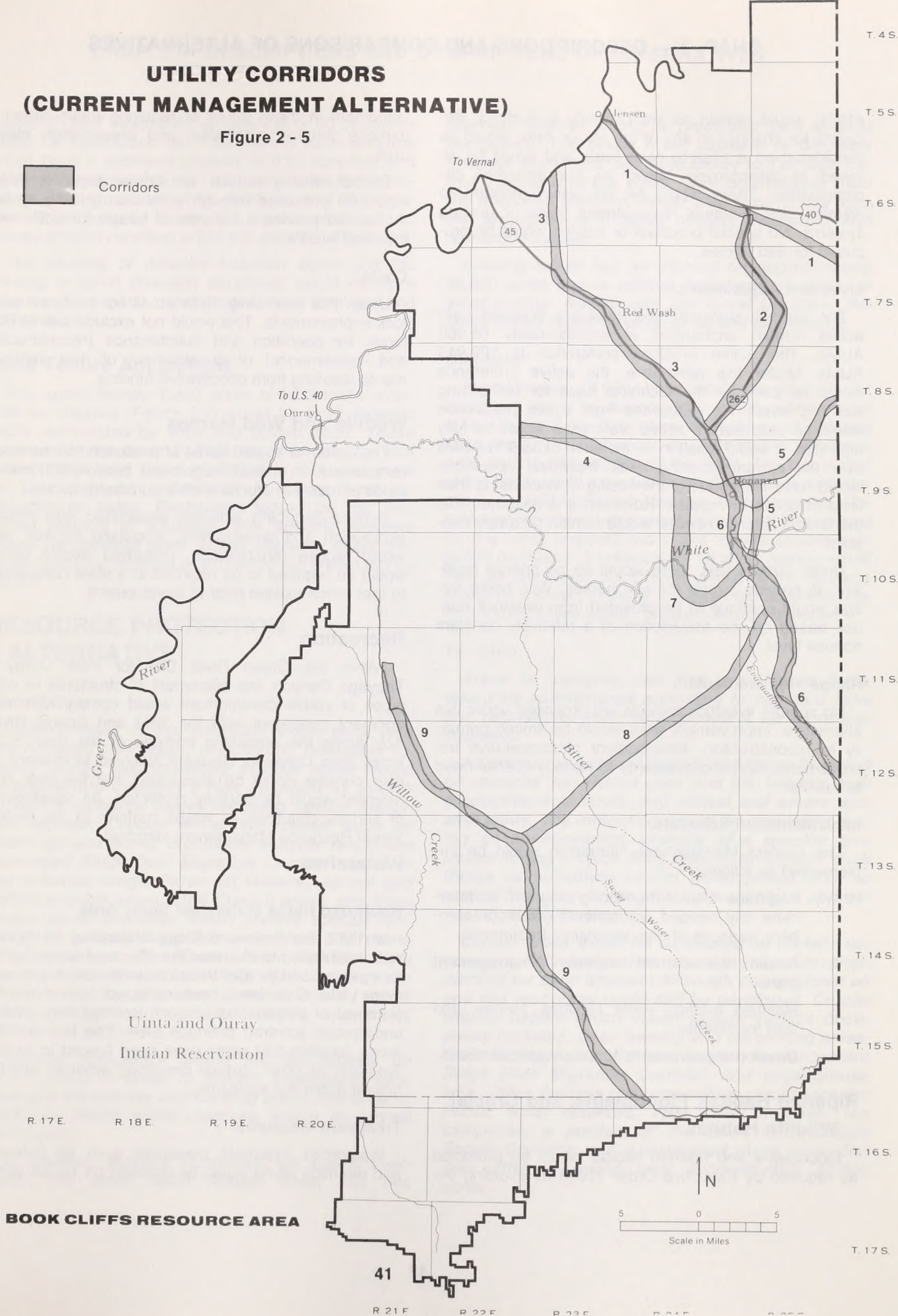


# UTILITY CORRIDORS (CURRENT MANAGEMENT ALTERNATIVE)

Figure 2 - 5



Corridors





## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

AMPs) would remain as are currently authorized. Requests for changes in any of the above items would be considered on a case-by-case basis and would be allowed or disapproved based on the individual circumstances. There would be no active program to develop new allotment management plans or grazing systems. No special practices or actions would be proposed for wild horses.

### **Livestock Adjustments.**

The current stocking level (average licensed use) would remain unchanged at approximately 66,980 AUMs. The active livestock preference is 102,915 AUMs. Under this alternative, the active preference would be used as the technical base for authorizing stocking levels. No reductions from active preference would be proposed. If active preference would be fully activated, it would result in an increase of 35,935 AUMs over the current stocking level. Individual operations would have the option of increasing or decreasing their level of active or nonuse. However, it is assumed that the overall level of nonuse would remain relatively constant.

Under current use, there would be no special provision to provide forage for wild horses. Wild horse forage would continue to be provided from livestock nonuse based on the assumption of a relatively constant nonuse level.

### **Range Improvements.**

No specific livestock projects are proposed under this alternative. Improvement work would be limited primarily to reconstruction, development of cooperative improvements, and improvements to remedy special need situations.

### **Implementation Schedule.**

The Current Management Alternative would be implemented as follows:

1. Begin the "5-year monitoring program" to determine any needed adjustments (livestock numbers, seasons of use, vegetative treatments).
2. Retain the current allotment management plans.
3. Maintain existing water facilities, fences, and land treatments.
4. Develop improvements to satisfy special needs.

### **Riparian Habitat, Floodplains, and Crucial Wildlife Habitat.**

Floodplains and riparian habitat would be protected as required by Executive Order 11988 by avoiding de-

velopment in these areas or requiring minimization of damage through restoration and preservation measures.

Crucial wildlife habitat on Lower McCook Ridge would be protected through a rotation grazing system that would provide a balance of forage for both livestock and wildlife.

### **Costs.**

Under this alternative, BLM would not fund new livestock improvements. This would not exclude use of BLM funds for operation and maintenance (reconstruction and maintenance) or development of new improvements resulting from cooperative funding.

### **Wildlife and Wild Horses**

The 5,000 to 10,000 acres of prescribed burns would concentrate on mature sagebrush canyon bottoms located primarily in crucial wildlife summer habitats.

Surface-disturbing activities associated with mineral exploration and development, woodland harvest, etc., would require rehabilitation. Disturbed wildlife habitat would be required to be returned to a state comparable to that which existed prior to development.

### **Recreation**

Within the Green River Corridor from Ouray to Tabyago Canyon, the placement of structures or other types of visible development would comply with management consistent with the Wild and Scenic Rivers Act. Along the remaining portions of the river, 5,250 acres from Ouray to Dinosaur National Monument, no river corridor would be designated, but the river environment would be partially protected. All development or surface disturbances would conform to the existing Visual Resource Management standard.

### **Watershed**

#### **Boulevard Ridge Watershed Study Area.**

In 1972, the Boulevard Ridge Watershed Study Area was established to examine the effects of removing mature pinyon and juniper trees on water runoff and sediment yield. Data have been collected from a chained (removal of pinyon and juniper) drainage area and an undisturbed (control) drainage area. The two drainage areas, totalling 330 acres have been fenced to exclude livestock; all other surface disturbing activities are prohibited within the enclosure.

#### **Treatment Measures.**

Watershed treatment measures such as detention and retention dams would be installed on 10,000 acres.



## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

Based on past treatments, an average of 50 structures would be constructed per 1,000 acres. Each structure would have a sediment capacity of 0.25 acre-feet and function for approximately 20 years without maintenance. The exact number of structures and their location are not currently known. The location of critical and severe erosion condition areas are shown in Figure 2-6.

The seeding of detention-retention dams and the utilizing of runoff diversion structures, would minimize adverse soil impacts, which might result from gas and oil activities.

### Land Tenure Adjustment

The approximately 1,360 acres of land made available for disposal (Figure 2-7) would be small, isolated tracts, surrounded by state and private lands. *These lands meet the basic FLPMA requirements for disposal. They have been identified in this document so they may be considered in future land exchanges or sales. Exchanges would be the preferred method of disposal. Site specific analysis would be required prior to any disposal effort.* Potential lands for disposal or exchange are shown in Figure 2-7.

## RESOURCE PROTECTION ALTERNATIVE

### Oil and Gas.

Implementation of this alternative would place land into restricted use areas, emphasizing renewable resource values. *Approximately 470,000 acres would be placed into Category 2 (see Appendix 4). Specific wildlife resource values requiring special mitigation include: Crucial winter elk habitat such as chainings and burns, crucial elk summer range, the Monument Ridge Deer Migration Corridor, and crucial antelope range. Perennial streams, severe and critical erosion areas, VRM Class II areas, and three scenic travel corridors would receive special mitigation to protect important watershed and recreation resources. The Green River Corridor from Ouray to Jensen and the White River Corridor upstream from the proposed damsite would receive special mitigation to protect wildlife, watershed, and recreation values.*

*Surface occupancy would not be allowed on 49,000 acres in order to protect sagegrouse leks, deer and elk calving and fawning areas, floodplains, wetlands, public water reserves, and a watershed study area.*

*In addition, thirteen campsites, six scenic overlooks, the Book Cliffs Natural Area, and two*

*ecologic features would be precluded from surface occupancy. The Green River adjacent to Dinosaur National Monument and from Ouray to Tabyago Canyon, along with the White River downstream from the proposed damsite, would also receive this special protection to enhance wildlife, watershed, and recreation values.*

*Leasing would not be allowed on approximately 36,000 acres due to current limitations of offsite or slant drilling. Additionally, the Naval Oil Shale Reserve would remain closed to oil and gas leasing.*

### Oil Shale.

Approximately 18,000 acres would be available for lease and would be designated a priority management area, (Figure 2-9). Two future oil shale tracts, totalling approximately 10,500 acres, could be leased within this area after implementation of the RMP. The actual size of the tracts could vary due to offsite disposal considerations or other legislation that may be forthcoming. Detailed environmental documentation would be required for any lease proposal and would require specific mitigation measures. A schedule for oil shale leasing would then be developed. Exploration drilling of the resource would be allowed to verify the projected estimates before a competitive leasing program would be started.

### Tar Sand.

*Areas in Category one and two (Figure 2-10), would be administered according to standard laws and regulations (refer to Appendix 4 for more discussion).*

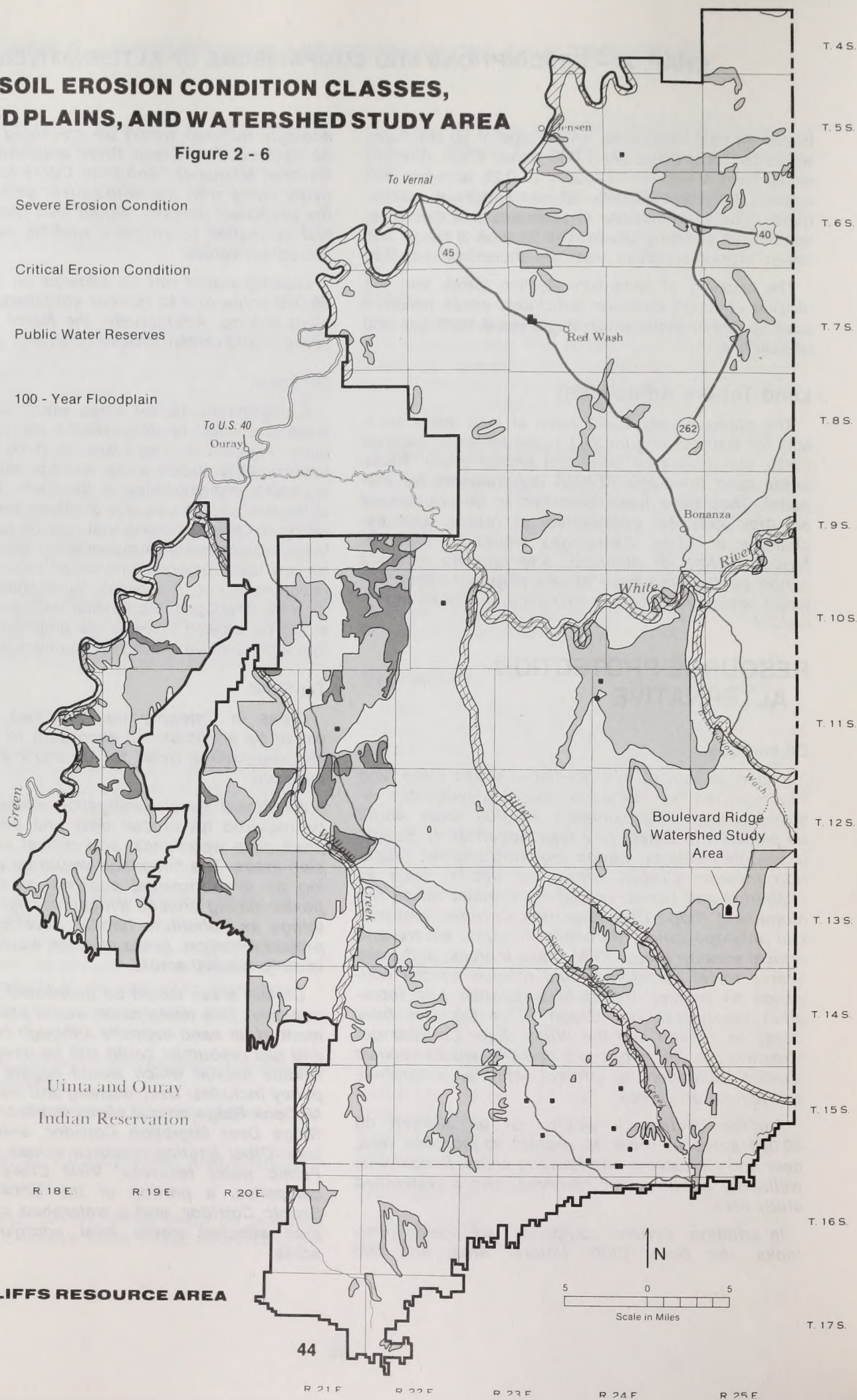
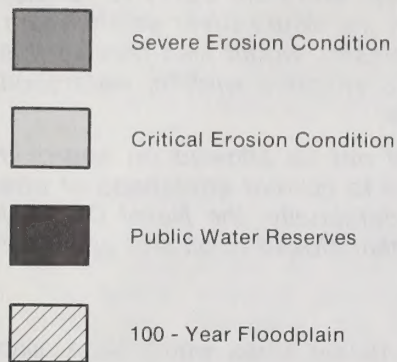
*Additional special mitigation (Category 2) would be required for crucial deer and elk habitat, high productive woodlands, and critical and severe erosion areas. The mitigation would be developed during an environmental analysis of a specific proposed mining project. Mitigation could include such things as substitute habitat development prior to project initiation. Areas affected would total approximately 106,000 acres.*

*Certain areas would be delineated no surface occupancy. This designation would preclude development of tar sand deposits although conventional oil and gas resources could still be developed. Crucial wildlife habitat which would negate surface occupancy includes: Deer fawning and elk calving areas, McCook Ridge crucial winter habitat, the Monument Ridge Deer Migration Corridor, and sage grouse leks. Other limiting resource values would include: Public water reserves, VRM Class II areas, ten campsites, a portion of the Book Cliffs Divide Scenic Corridor, and a watershed study area. The area affected would total approximately 67,000 acres.*



# SOIL EROSION CONDITION CLASSES, FLOOD PLAINS, AND WATERSHED STUDY AREA

Figure 2 - 6




BOOK CLIFFS RESOURCE AREA



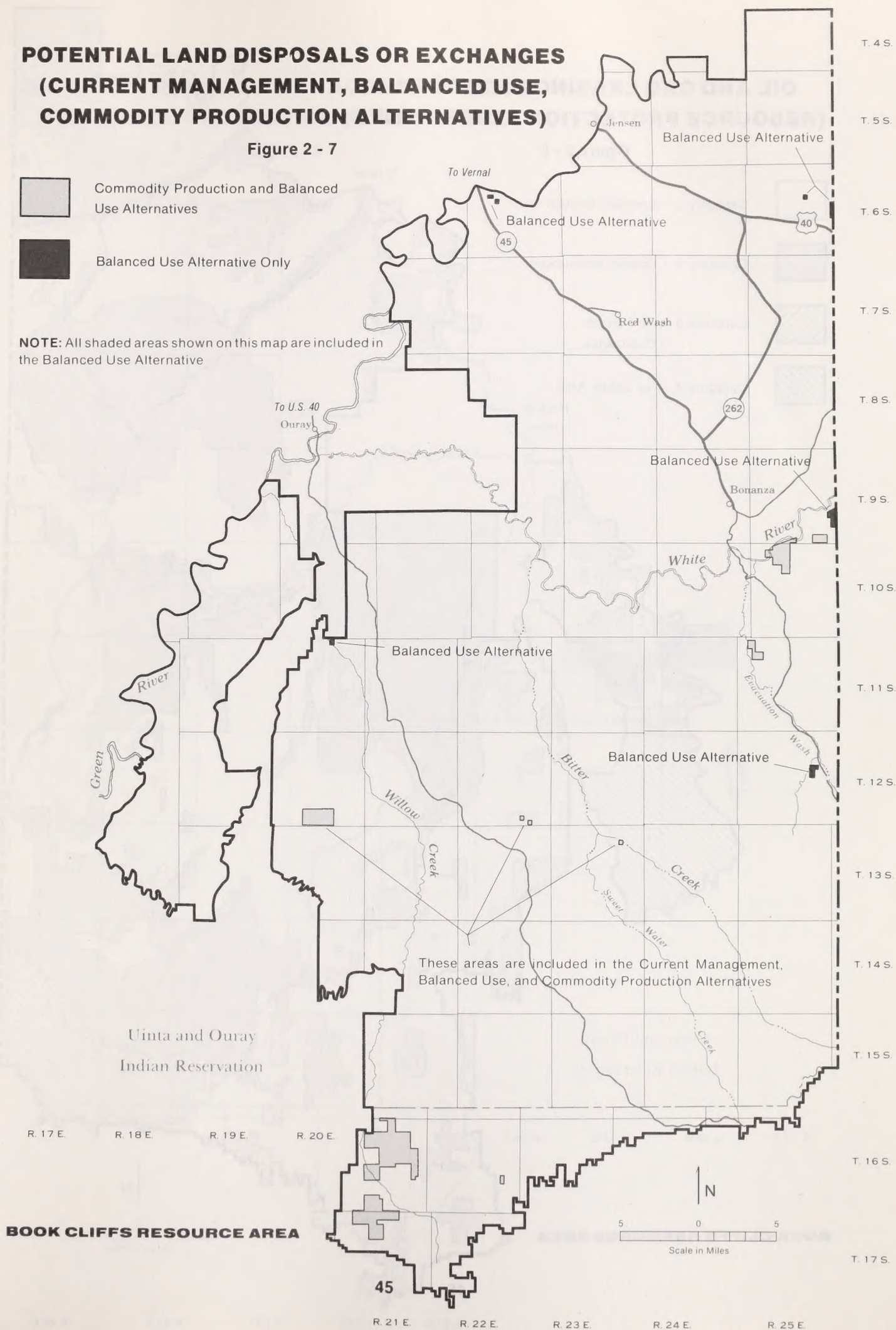
# POTENTIAL LAND DISPOSALS OR EXCHANGES (CURRENT MANAGEMENT, BALANCED USE, COMMODITY PRODUCTION ALTERNATIVES)

Figure 2 - 7

 Commodity Production and Balanced Use Alternatives

 Balanced Use Alternative Only





**NOTE:** All shaded areas shown on this map are included in the Balanced Use Alternative

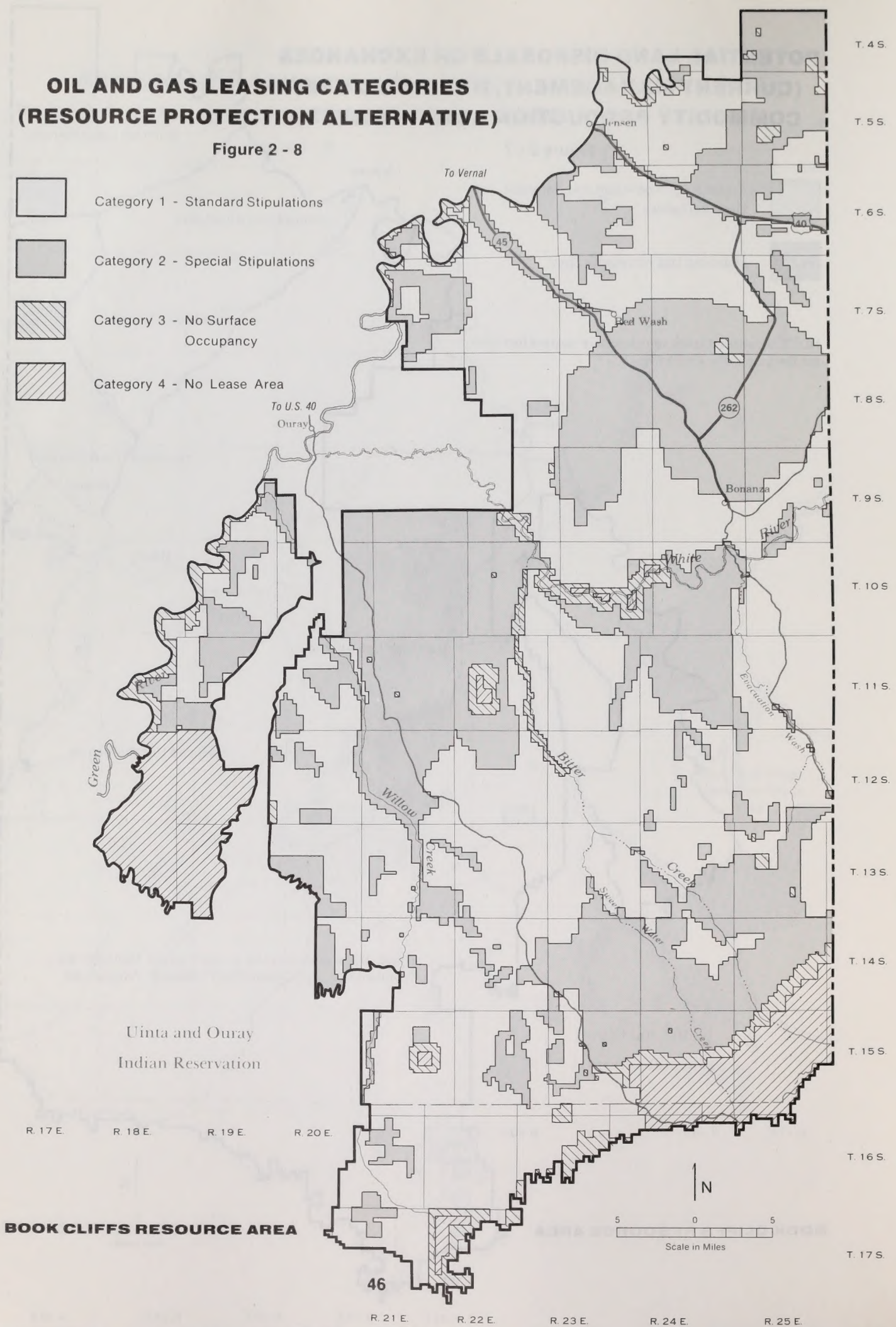




# **OIL AND GAS LEASING CATEGORIES (RESOURCE PROTECTION ALTERNATIVE)**

**Figure 2 - 8**

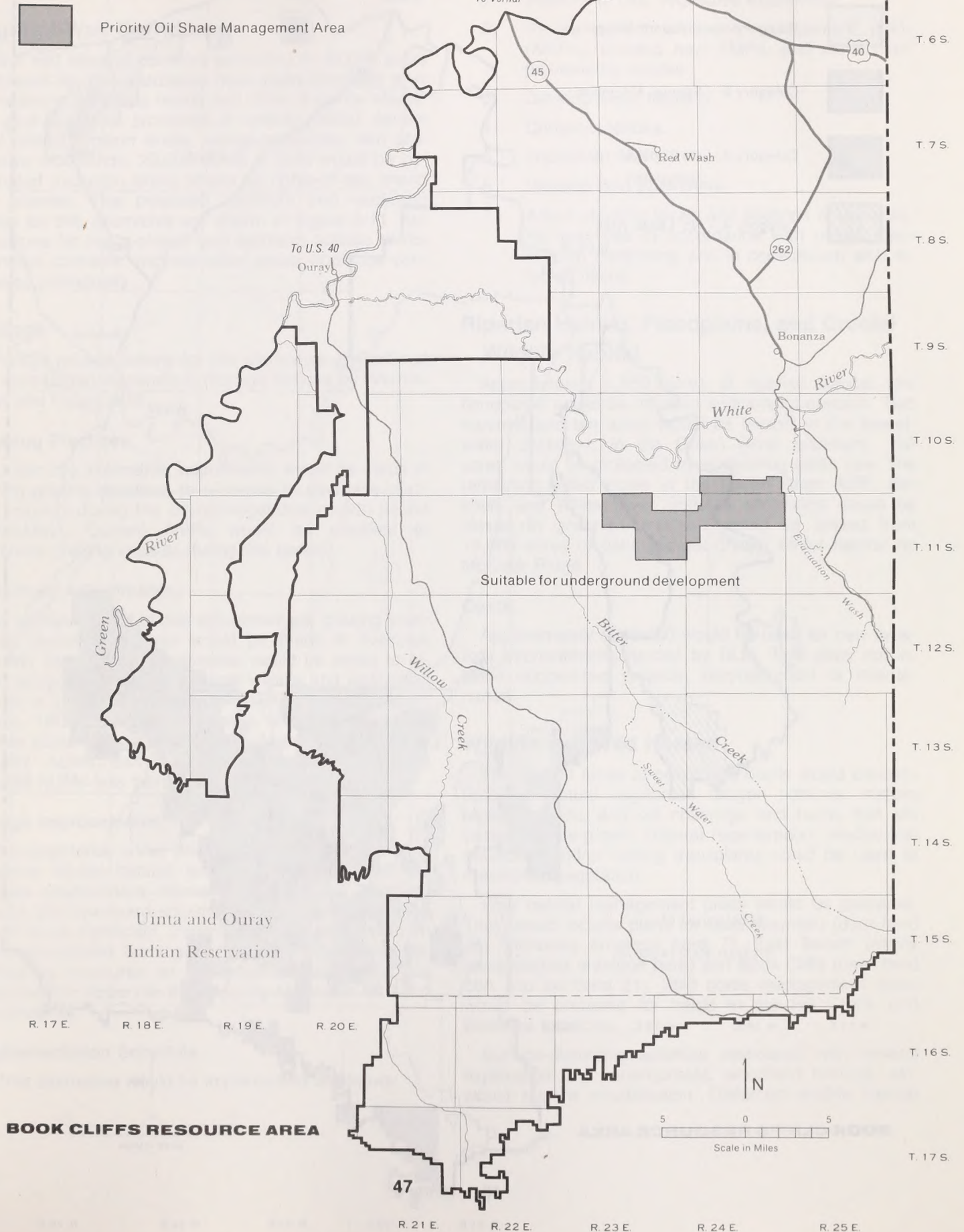
-  Category 1 - Standard Stipulations
-  Category 2 - Special Stipulations
-  Category 3 - No Surface Occupancy
-  Category 4 - No Lease Area





# OIL SHALE PRIORITY MANAGEMENT AREAS (RESOURCE PROTECTION ALTERNATIVE)

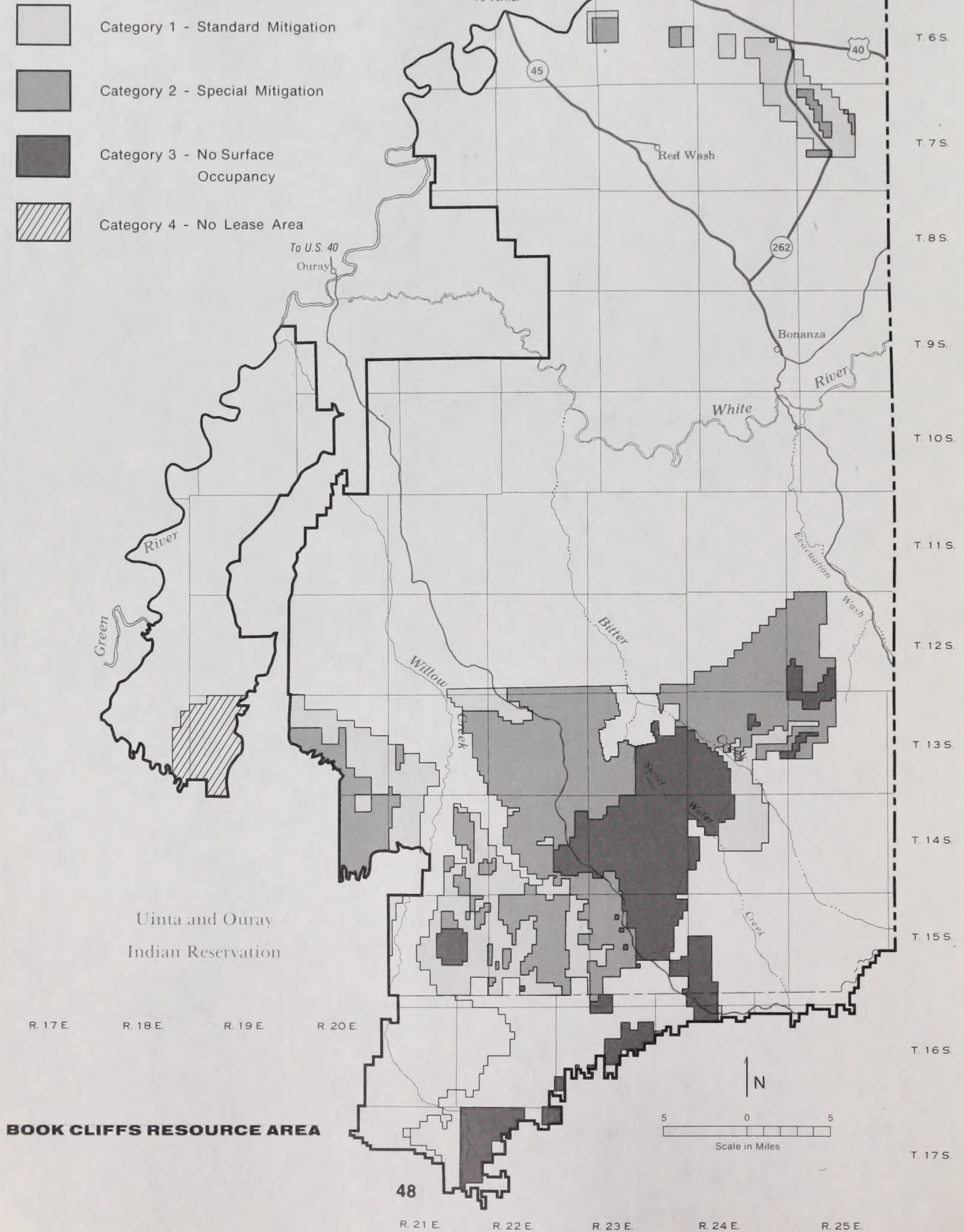
Figure 2 - 9





# TAR SAND LEASING CATEGORIES (RESOURCE PROTECTION ALTERNATIVE)

Figure 2 - 10





## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

*Tar sand leases would not be issued within the Naval Oil Shale Reserve.*

### Right-of-Way Corridors

The 150 miles of corridors consisting of 46,000 acres proposed for this alternative have been identified after considering industry's needs and other resource values. To give additional protection to wildlife habitat, severe and critical erosion areas, visual resources, and productive woodlands, 23,000 acres of land would be designated exclusion areas where no rights-of-way would be allowed. The proposed corridors and exclusion areas for this alternative are shown in Figure 2-11. Applications for rights-of-way and corridors outside of designated corridors and exclusion areas would be considered individually.

### Forage

Forage related actions for this alternative are outlined by allotment in Appendix 5 (Forage Actions by Alternative) and Figure 2-12.

### Grazing Practices.

Under this alternative, adjustments would be made in spring grazing practices to eliminate or decrease grazing impacts during the critical vegetative growth period (April-May). Current AMPs would be modified to minimize grazing impacts during this period.

### Livestock Adjustments.

In addition to the above adjustments in grazing practices, overall decreases would be made in livestock grazing use. These adjustments would be made to afford protection to specific critical wildlife and watershed areas, e.g. critical wintering or fawning areas, riparian areas, 100-year flood plain areas, etc. The number of AUMs authorized for livestock would be **53,459**. This is **13,521** AUMs less than current average use and **49,456** AUMs less than active preference.

### Range Improvements.

Developments under this alternative would primarily improve wildlife habitat, ecological condition, and the natural environment. However, without the improvements, the downward adjustments to livestock would be much more significant. Vegetation treatments would include prescribed burning and pinyon-juniper clearcuts. Mitigating measures for the proposed treatments are described in Appendix 8 (Mitigating Measures for Land Treatments).

### Implementation Schedule.

This alternative would be implemented as follows:

1. Begin the "5-year monitoring program" to determine any adjustment needs (livestock numbers, seasons of use, vegetative treatments).
2. Revise current allotment management plans (AMPs), develop new AMPs, and identify improvements needed.
3. Develop water facilities.
4. Construct fences.
5. Implement AMPs.
6. Develop land treatments.
7. Adjust stocking levels and seasons of use grazing practices in accordance with needs identified in monitoring and in consultation with affected users.

### Riparian Habitat, Floodplains, and Crucial Wildlife Habitat

Approximately 5,950 acres of riparian habitat and floodplains would be afforded additional protection. Two hundred and ten acres would be fenced in the Sweetwater allotment. In the Green River allotment, 150 acres would be protected by eliminating cattle use. The remaining 5,590 acres in the Green River AMP, Birchell, and White River Bottoms allotments would be closed to grazing. Livestock would be limited from 14,000 acres of deer and elk crucial winter habitat on McCook Ridge.

### Costs.

Approximately \$342,000 would be used for new livestock improvements funded by BLM. This does not include cooperative projects, reconstruction or maintenance.

### Wildlife and Wild Horses

The 15,000 acres of prescribed burns would concentrate on mature sagebrush canyon bottoms, mature browse stands, and old chainings and burns that are becoming overgrown. Natural regeneration, mechanical reseeding and/or tubling transplants could be used to reestablish vegetation.

Four habitat management plans would be prepared. They would include plans for Blue Mountain (deer herd 26), Bonanza antelope herd 7), East Bench (newly reestablished antelope herd) and Book Cliffs (deer herd 28A and elk herd 21). Wild horse management plans would be prepared for herds in the Hill Creek and Bonanza locations.

Surface-disturbing activities associated with mineral exploration and development, woodland harvest, etc. would require rehabilitation. Disturbed wildlife habitat



# UTILITY CORRIDORS (RESOURCE PROTECTION ALTERNATIVE)

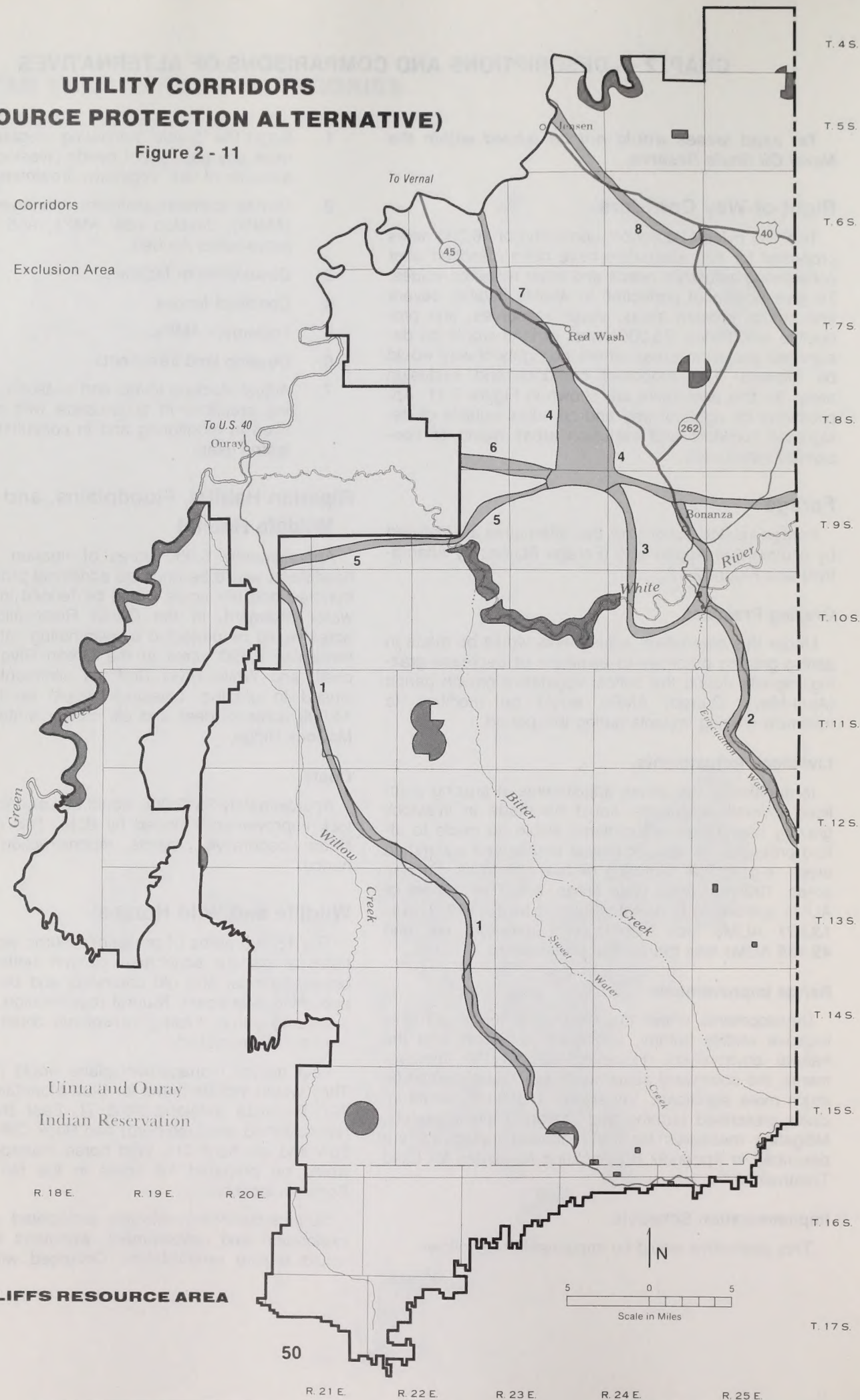
Figure 2 - 11



Corridors



Exclusion Area

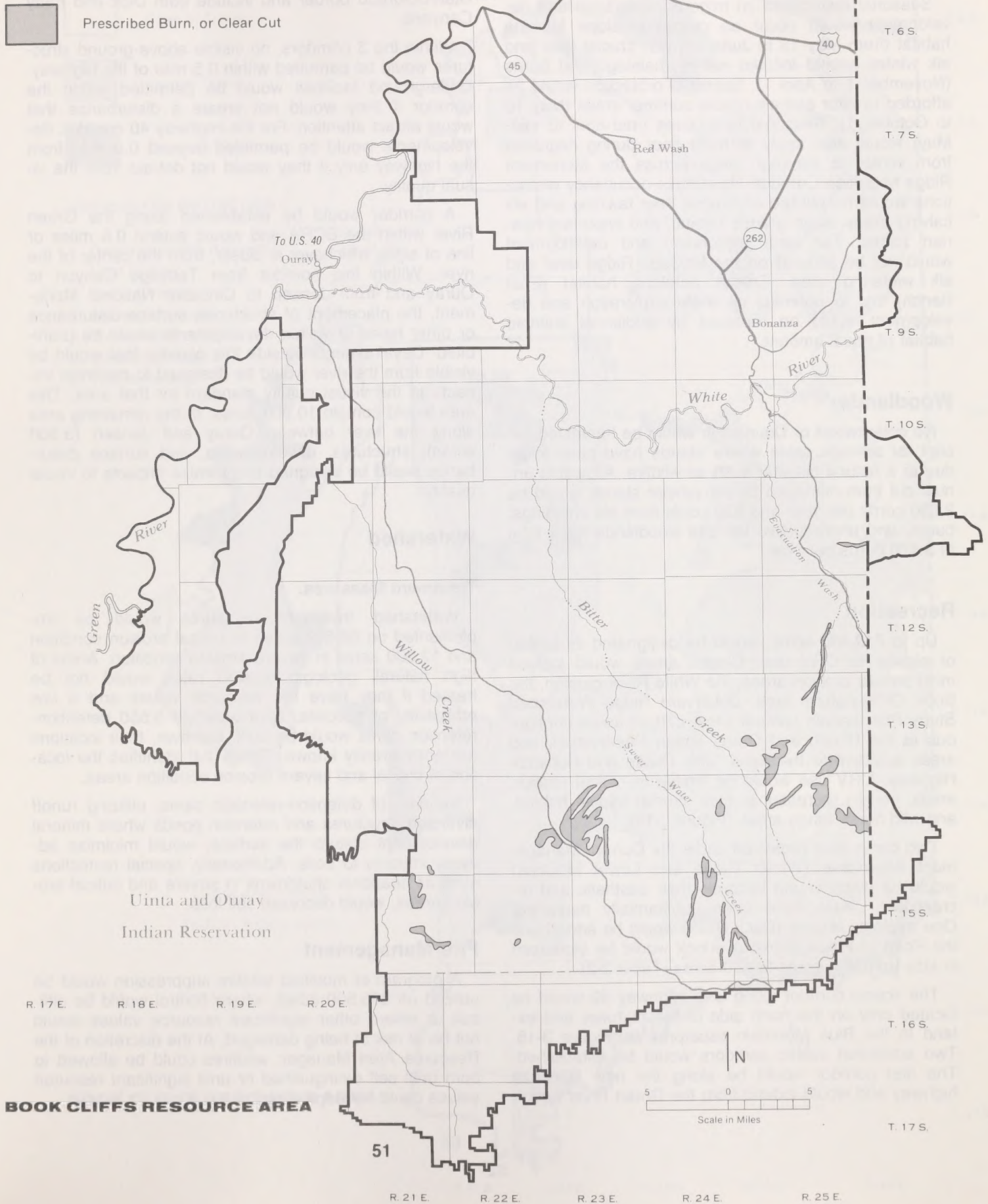


BOOK CLIFFS RESOURCE AREA



# VEGETATIVE TREATMENTS (RESOURCE PROTECTION ALTERNATIVE)

Figure 2 - 12





## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

would be required to be returned to a state comparable to that which existed prior to development.

Seasonal restrictions on mineral exploration and development would occur on crucial antelope fawning habitat (from May 15 to June 20) and crucial deer and elk winter habitat located within chainings and burns (November 1 to April 1). Seasonal protection would be afforded to deer and elk crucial summer areas (May 10 to October 1). Seasonal restrictions (mid-April to mid-May) would also apply to mule deer during migration from winter to summer range across the Monument Ridge Migration Corridor. No surface-occupancy restrictions would be utilized on crucial deer fawning and elk calving areas, sage grouse habitat, and important riparian zones. Tar sand exploration and development would not be allowed on the McCook Ridge deer and elk wintering area. Crucial antelope habitat (East Bench) lost to potential oil shale exploration and development would be replaced by additional suitable habitat of equal amount.

### Woodlands

No cottonwood or Douglas fir would be harvested except for salvage sales where stands have been killed due to a natural disaster such as wildfire. Allowable annual cut from managed pinyon-juniper stands would be 2,650 cords per year and 820 cords from old chainings, burns, and unproductive low-site woodlands for a total of 3,470 cords per year.

### Recreation

Up to **710,400** acres, would be designated as limited or closed to ORV use. Closed areas would include most severe erosion areas, the White River canyon, the Book Cliffs natural area, Boulevard Ridge Watershed Study Plot, certain cultural sites, certain areas contiguous to the Uintah and Ouray Indian Reservation, and areas adjacent to the Book Cliffs Divide and Bonanza Highway. ORV use would be limited in critical erosion areas, certain recreational sites, crucial wildlife habitat, and wild horse range areas (Figure 2-13).

Two camp sites protected under the Current Management Alternative (Winter Ridge and Lower McCook) would be discontinued because their aesthetic and recreational values have been substantially degraded. One geologic feature (Duck Rock) would be added and the Point of Pines scenic overlook would be increased in size from 320 acres to 480 acres (Table 2-2).

The scenic corridor along U.S. Highway 40 would be located only on the north side of the highway and extend to the Blue Mountain escarpments, Figure 3-16. Two additional scenic corridors would be established. The first corridor would be along the new Bonanza highway and would extend from the Green River bridge

south for 6 miles. The second corridor would extend from PR Spring along the Book Cliffs Divide road to the Utah/Colorado border and include both Dick and Fatty Canyons.

Within the 3 corridors, no visible above-ground structures would be permitted within 0.5 mile of the highway. Underground facilities would be permitted within the corridor if they would not create a disturbance that would attract attention. For the Highway 40 corridor, developments would be permitted beyond 0.5 mile from the highway only if they would not detract from the visual quality.

A corridor would be established along the Green River within the BCRA and would extend 0.5 miles or line of sight, whichever is closer, from the center of the river. Within this corridor from Tabyago Canyon to Ouray and from Jensen to Dinosaur National Monument, the placement of structures, surface disturbance or other types of visible developments would be prohibited. Developments outside this corridor that would be visible from the river would be designed to minimize impacts to the visual quality standard for that area. This area would contain 10,900 acres. In the remaining area along the river between Ouray and Jensen (3,500 acres), structures, developments, and surface disturbance would be designed to minimize impacts to visual quality.

### Watershed

#### Treatment Measures.

Watershed treatment measures would be implemented on 98,800 acres in critical erosion condition and 12,300 acres in severe erosion condition. Areas of high natural, geologic erosion rates would not be treated if they have low resource values and a low probability of success. Approximately 5,550 detention-retention dams would be built; however, their locations are not currently known. Figure 2-6 identifies the location of critical and severe erosion condition areas.

Seeding of detention-retention dams, utilizing runoff diversion structures and retention ponds where mineral development disturb the surface, would minimize adverse impacts to soils. Additionally, special restrictions such as seasonal shutdowns in severe and critical erosion areas, would decrease soil loss.

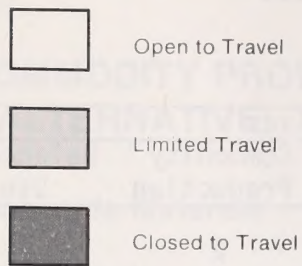
### Fire Management

A program of modified wildfire suppression would be utilized on 965,500 acres, where control would be difficult or where other significant resource values would not be at risk of being damaged. At the discretion of the Resource Area Manager, wildfires could be allowed to burn until self extinguished or until significant resource values could be jeopardized.



# OFF-ROAD VEHICLE DESIGNATION (RESOURCE PROTECTION ALTERNATIVE)

Figure 2 - 13



## REASONS FOR PROTECTION

- 1 Consistency with Adjacent Land Owner
- 2 Cultural Values
- 3 Recreation Values
- 4 Watershed Protection
- 5 Wildhorse Range
- 6 Wildlife Values

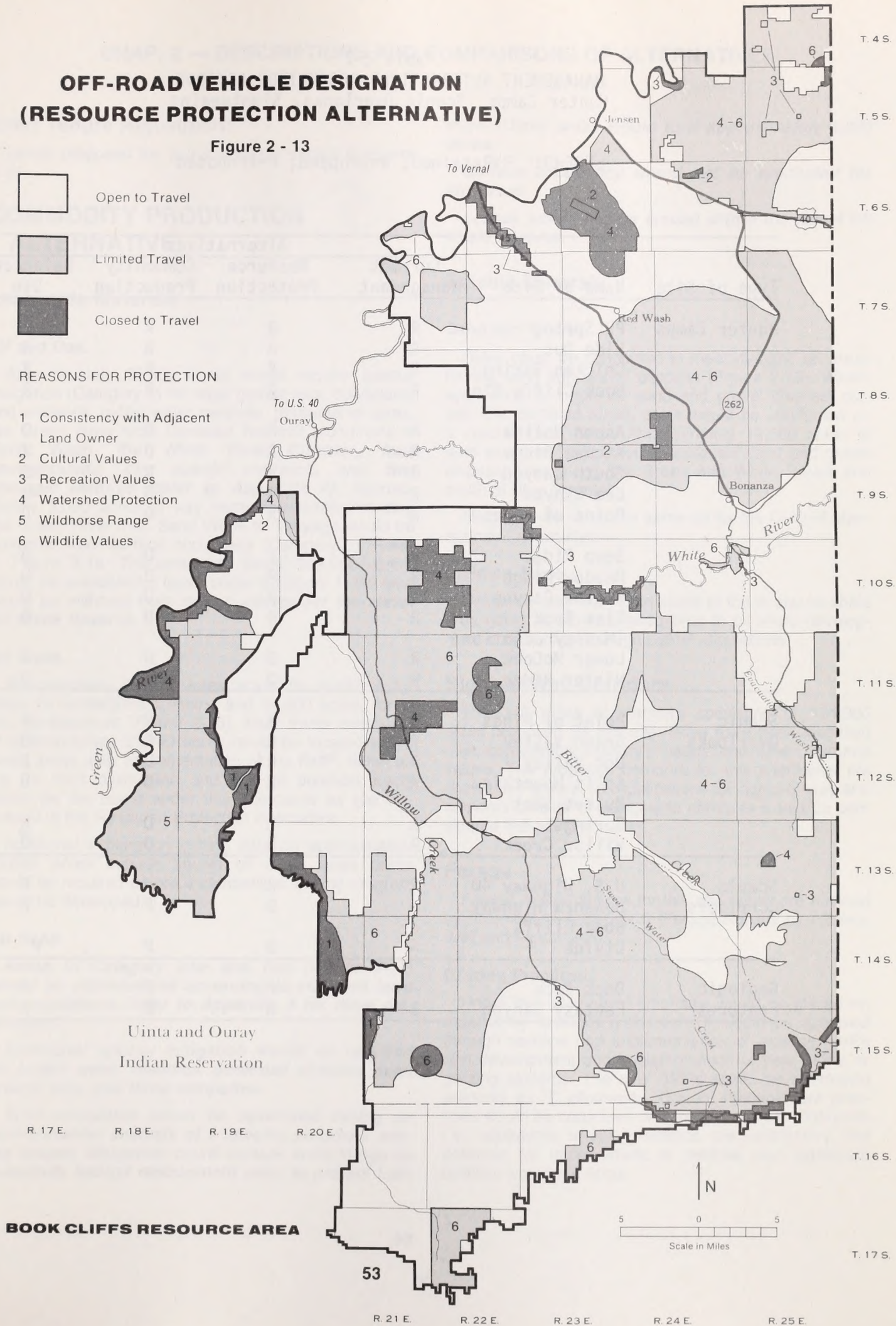




Table 2-2  
MANAGEMENT ALTERNATIVES-RECREATION ACTIONS  
Hunter Camps, Scenic Overlooks, Sightseeing

LEGEND: R=Retained; D=Dropped; P=Proposed

Type of Site	Name of Site	Alternatives			
		Current Management	Resource Protection	Commodity Production	Balanced Use
Hunter Camps	PR Spring	R	R	R	R
	Hide Out	R	R	R	R
	Chicken Spring	R	R	R	R
	Book Cliffs Rim	R	R	R	R
	Aspen Hollow	R	R	D	D
	Atchee Ridge	R	R	D	R
	South Canyon	R	R	D	D
	Lee Canyon	R	R	D	D
	Point of Pines	R	R	D	D
	Seep Ridge	R	R	D	D
	Meadow Ridge	R	R	D	D
	Willow Canyon	R	R	D	D
	Flat Rock	R	R	D	D
	(Massey Junction)				
	Lower McCook	R	D	D	D
	Winter Ridge	R	D	D	D
Scenic Overlooks	Point of Pines	R	R	R	R
	Grand Valley	R	R	D	D
	Doc Valley	R	R	D	D
	Split Mountain	R	R	D	D
	Musket Shot				
	Springs	R	R	D	<u>R</u>
	Willow Creek	R	R	D	<u>D</u>
Scenic Corridors	U.S. Highway 40	R	R	D	R
	Bonanza Highway	-	D	P	P
	Book Cliffs				
	Divide	-	D	P	P
Geologic Features	Duck Rock	-	P	P	P
	Fantasy Canyon	R	R	R	R



## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

### Land Tenure Adjustment

Lands proposed for acquisition are shown in Figure 2-14.

## COMMODITY PRODUCTION ALTERNATIVE

### Leaseable Minerals

#### Oil and Gas.

Approximately 35,000 acres would require special mitigation (Category 2) for sage grouse leks, floodplains and wetlands, public water reserves, perennial streams, the Green River from Dinosaur National Monument to Sand Wash, the White River **Corridor, four campgrounds, one scenic overlook, and two geologic features (refer to Appendix 4)**. Approximately 3,000 acres of key recreation areas including the Green River from Sand Wash to Tabyago would be protected from surface occupancy (Category 3). Refer to Figure 2-15. The remaining lands, 989,000 acres, would be available for lease under Category 1. No land would be withheld from leasing **except for the Naval Oil Shale Reserve**.

#### Oil Shale.

Approximately 84,000 acres would be available for lease for underground mining and 14,000 acres, for in situ development (Figure 2-16). Four tracts consisting of approximately 21,000 acres could be located within these areas after implementation of the RMP. Scheduling for tract delineation and size of potential tracts would be the same under this alternative as are discussed in the Resource Protection Alternative.

Additional exploration drilling data on approximately 33,000 acres outside known oil shale lease areas would be required before a competitive leasing program would be developed.

#### Tar Sand.

**Areas in Category one and two (Figure 2-17) would be administered according to standard laws and regulations (refer to Appendix 4 for more discussion).**

**Additional special mitigation would be required for public water reserves, perennial streams, sage grouse leks, and three campsites.**

**Such mitigation would be developed during an environmental analysis of a specific proposed mining project. Mitigation could include such things as substitute habitat replacement prior to project initi-**

**ation. These areas would total approximately 4,000 acres.**

**Surface occupancy would not be precluded for any areas.**

**Leases would not be issued within the Naval Oil Shale Reserve.**

### Salable Minerals

#### Sand and Gravel.

Sales could be conducted to meet demand on areas having sand and gravel deposits (Figure 2-18). Where application is made for sand and gravel disposal outside the identified areas, sales would be conducted on a case-by-case basis. Approximately 12,500 acres of land would be designated as potential sand and gravel disposal sites along the Green and White Rivers and south of Blue Mountain.

Mitigation would be the same as for the Current Management Alternative.

#### Building Stone.

Collection and use of the stone in the in situ oil shale area could be accomplished prior to oil shale development construction through permit stipulations.

### Right-of-Way Corridors

The 330 miles of corridors consisting of 174,000 acres proposed for this alternative have been identified after considering industry's needs and other resource values. The proposed corridors for this alternative are shown in Figure 2-19. Applications for rights-of-way and corridors outside of designated corridors would be considered individually.

### Forage

Forage related actions for this alternative are outlined by allotment in Appendix 5 (Forage Actions by Alternative) and Figure 2-20.

### Grazing Practices.

Under this alternative, emphasis would be placed on maximizing livestock production. It would be achieved through revision and implementation of existing AMPs and development and implementation of new AMPs or grazing systems. The new AMPs would be developed primarily on "I" allotments. Current management practices would be continued on a number of "M" allotments i.e., allotments where conditions are satisfactory, the potential for improvement is minimal and significant conflicts would not occur.

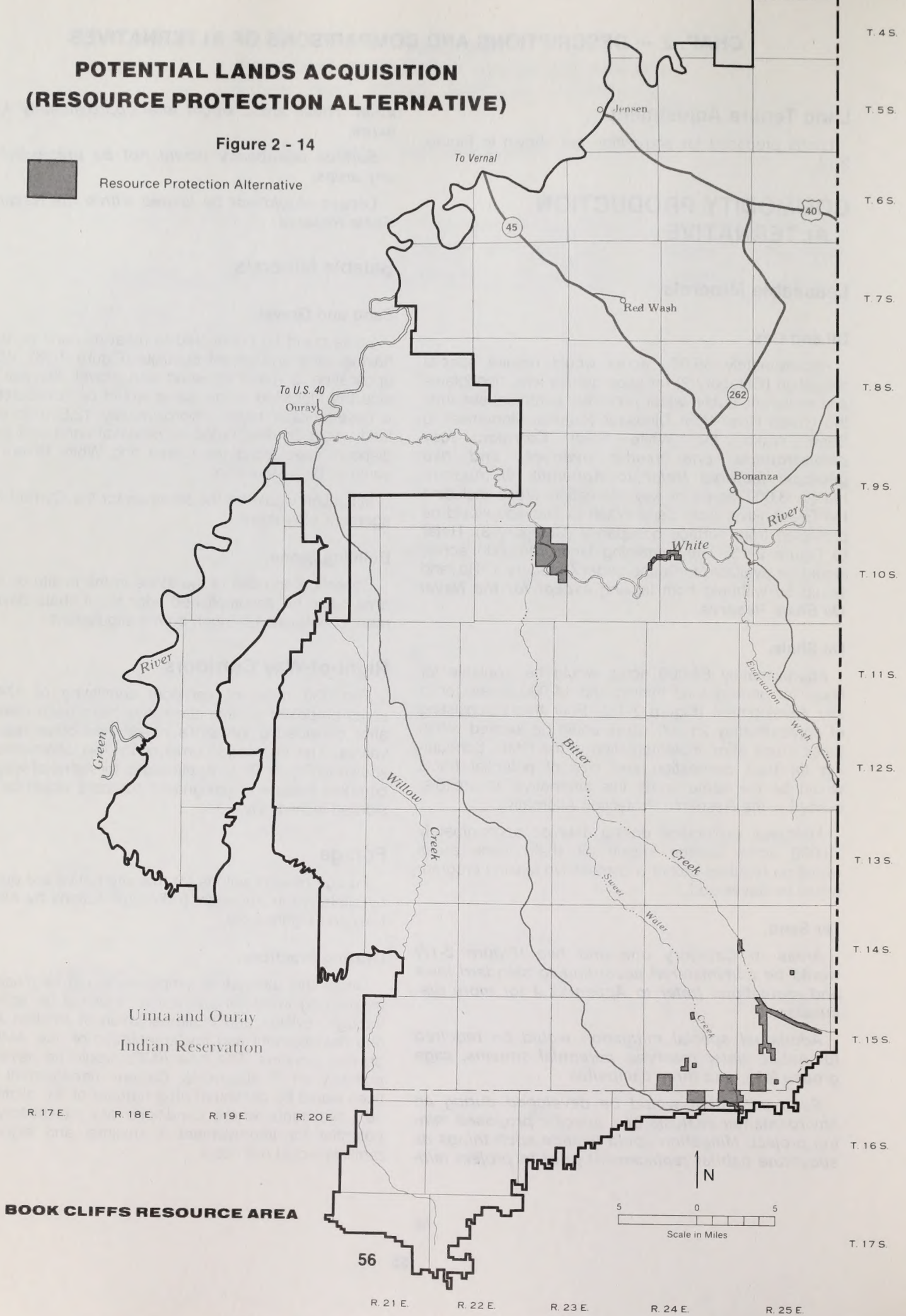


# **POTENTIAL LANDS ACQUISITION (RESOURCE PROTECTION ALTERNATIVE)**

**Figure 2 - 14**



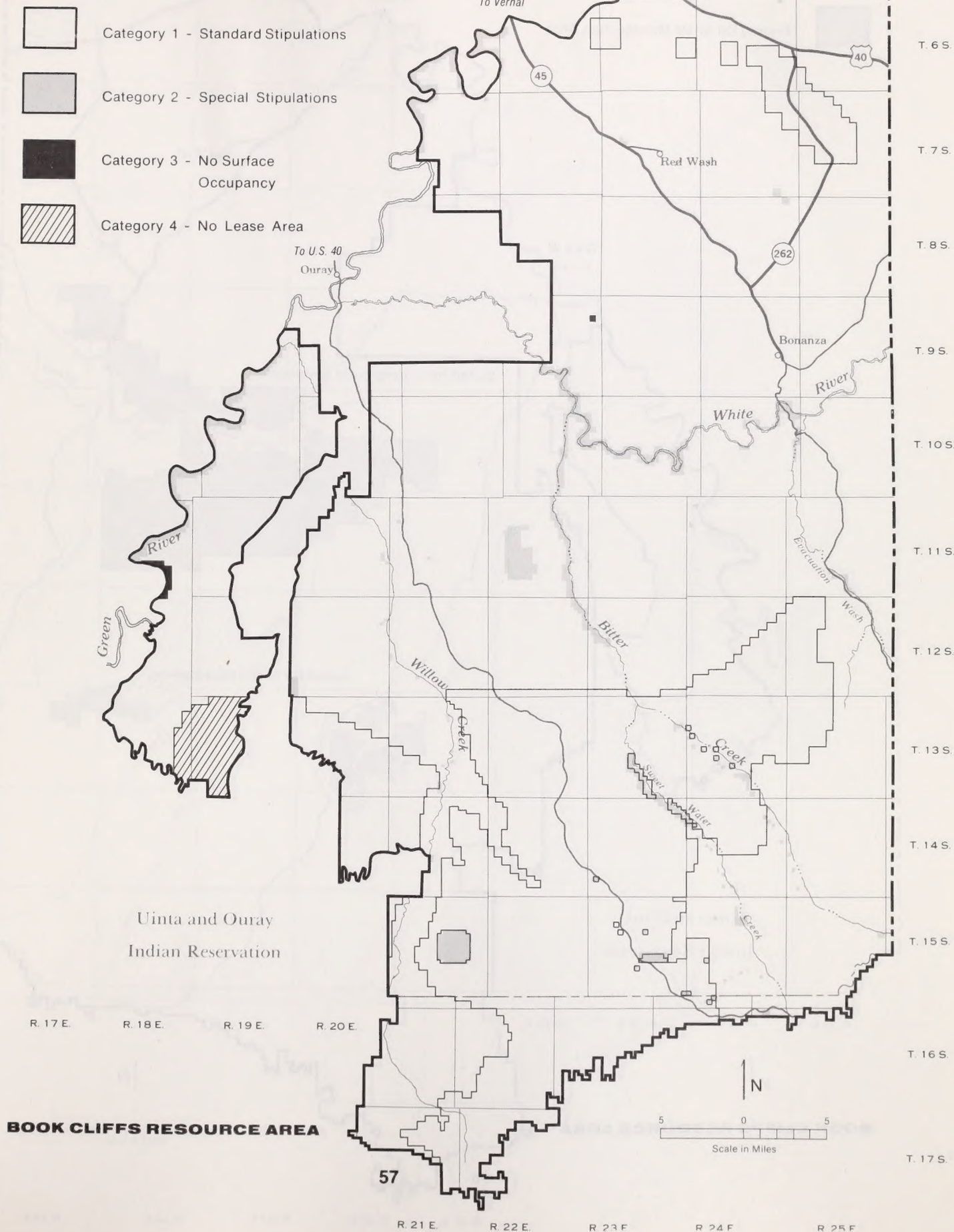
Resource Protection Alternative





# **OIL AND GAS LEASING CATEGORIES (COMMODITY PRODUCTION ALTERNATIVE)**

**Figure 2 - 15**



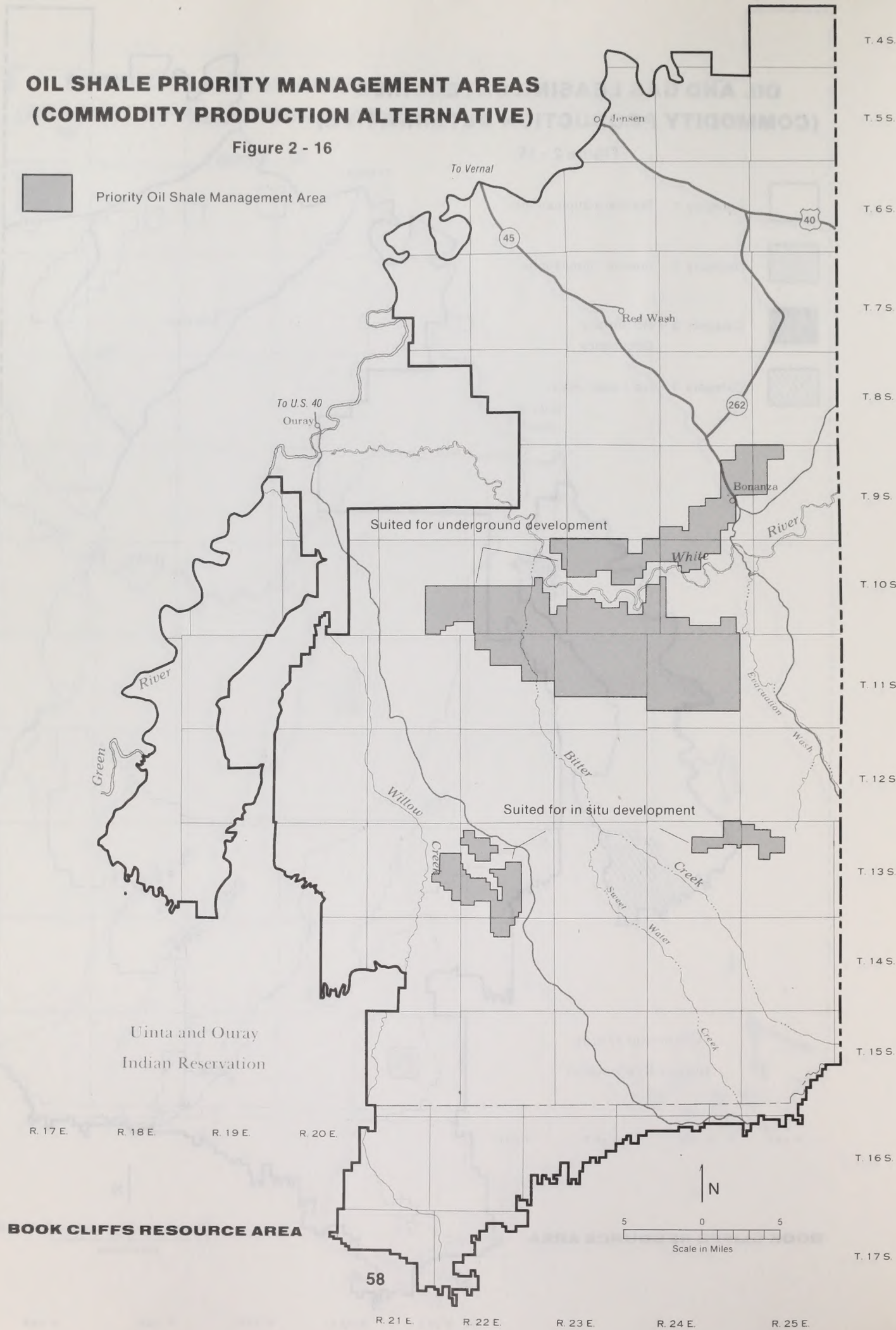


# **OIL SHALE PRIORITY MANAGEMENT AREAS (COMMODITY PRODUCTION ALTERNATIVE)**

**Figure 2 - 16**







Priority Oil Shale Management Area

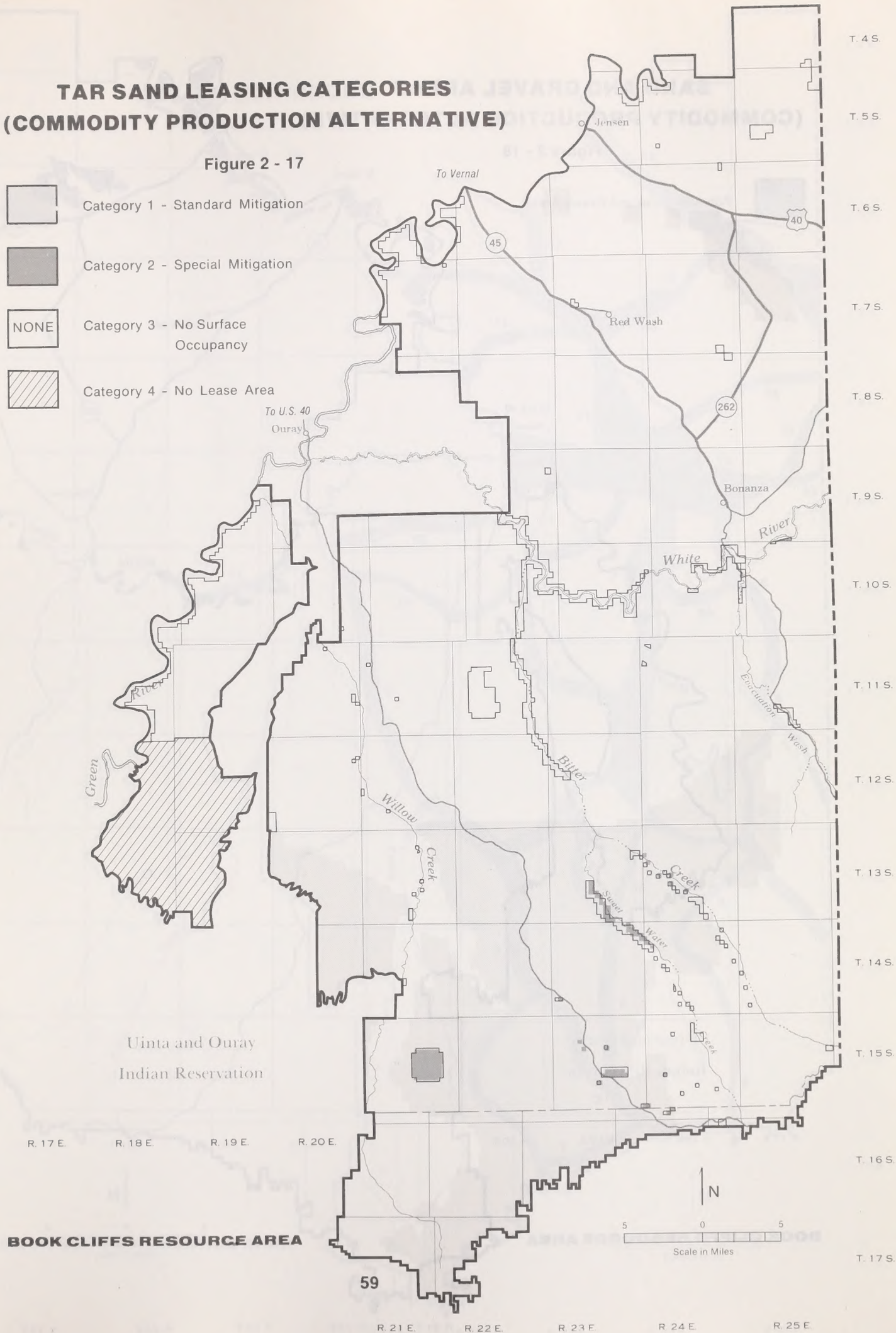




# TAR SAND LEASING CATEGORIES (COMMODITY PRODUCTION ALTERNATIVE)

Figure 2 - 17

-  Category 1 - Standard Mitigation
-  Category 2 - Special Mitigation
-  Category 3 - No Surface Occupancy
-  Category 4 - No Lease Area



BOOK CLIFFS RESOURCE AREA

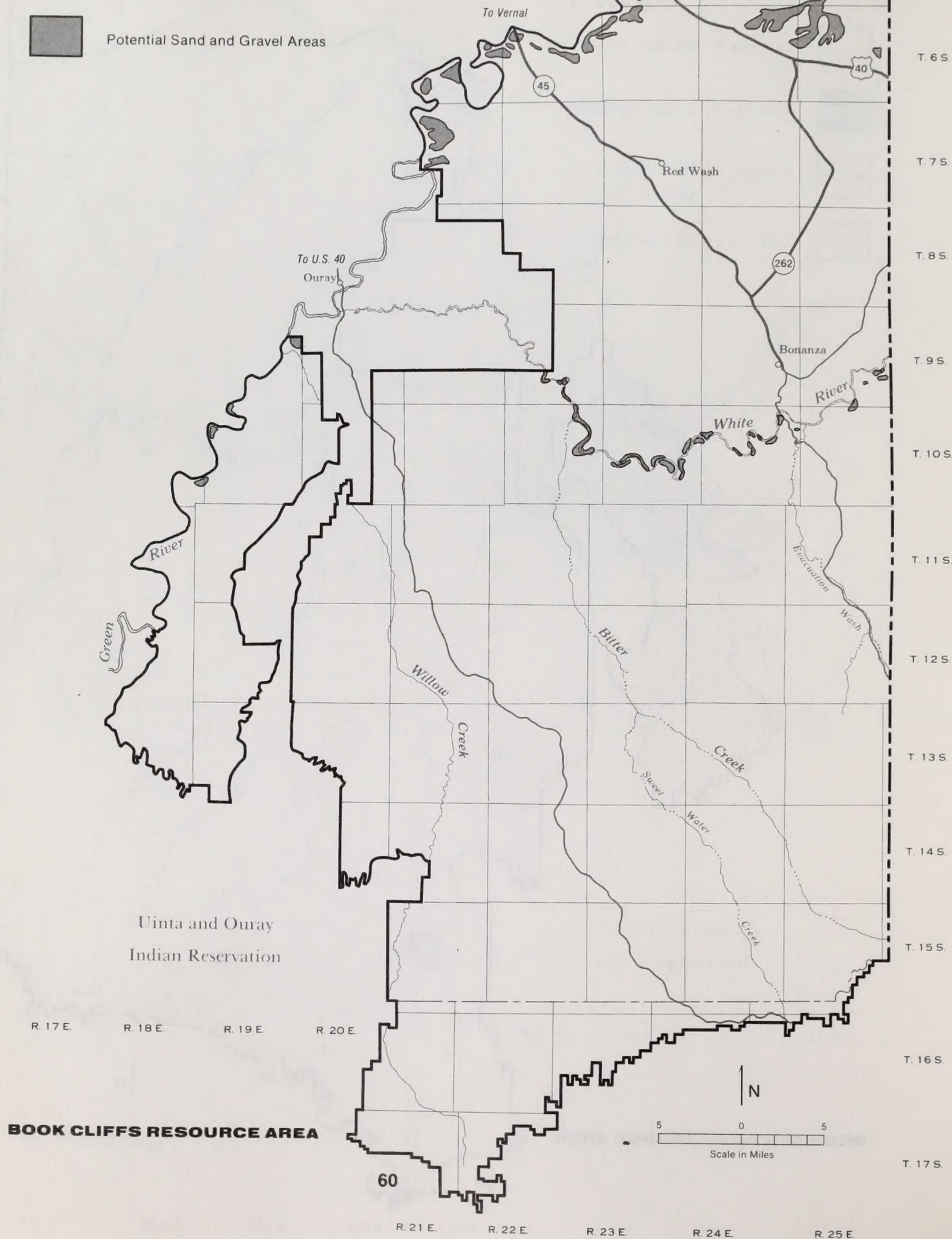


# **SAND AND GRAVEL AREAS (COMMODITY PRODUCTION ALTERNATIVE)**

Figure 2 - 18



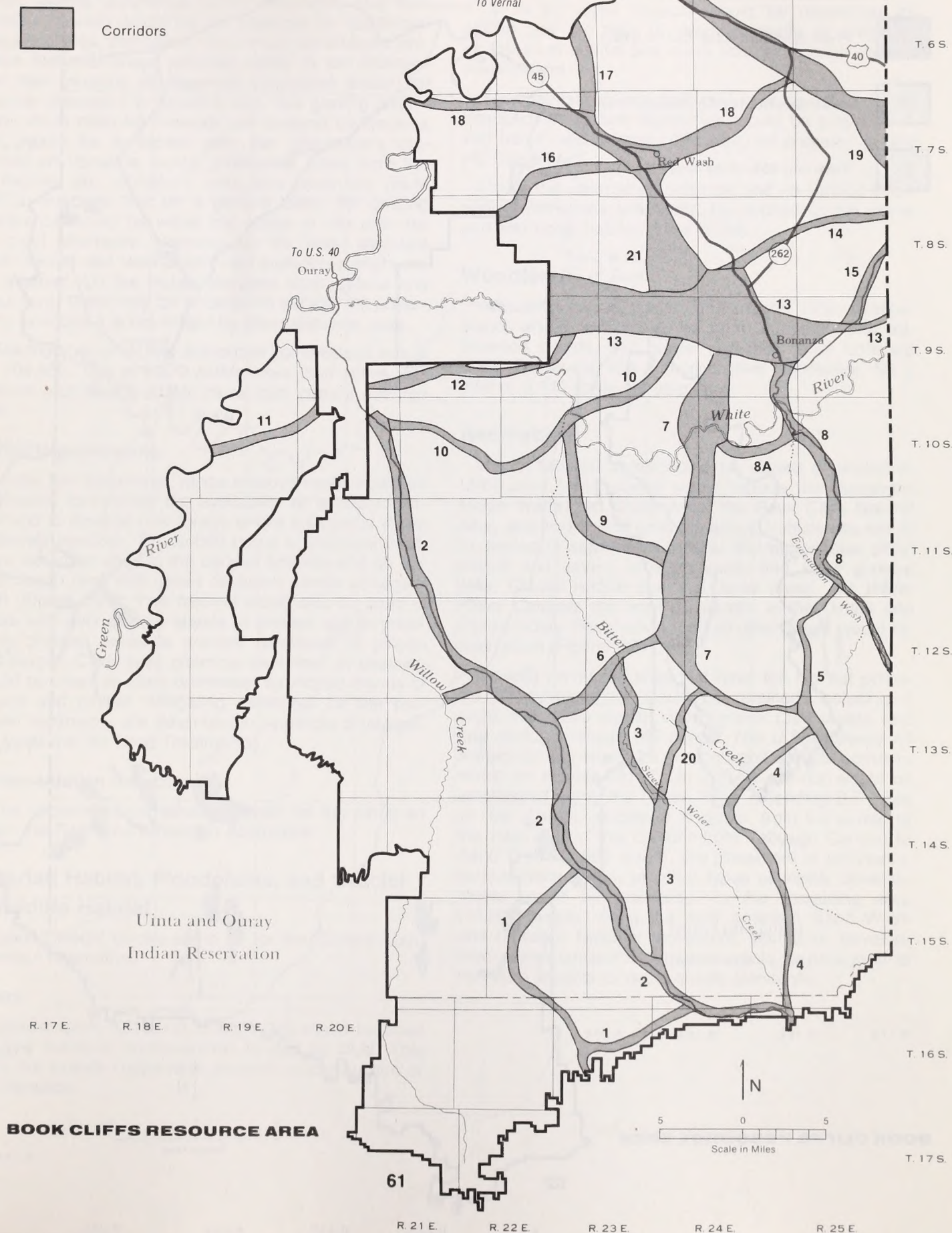
Potential Sand and Gravel Areas





# UTILITY CORRIDORS (COMMODITY PRODUCTION ALTERNATIVE)




Figure 2 - 19

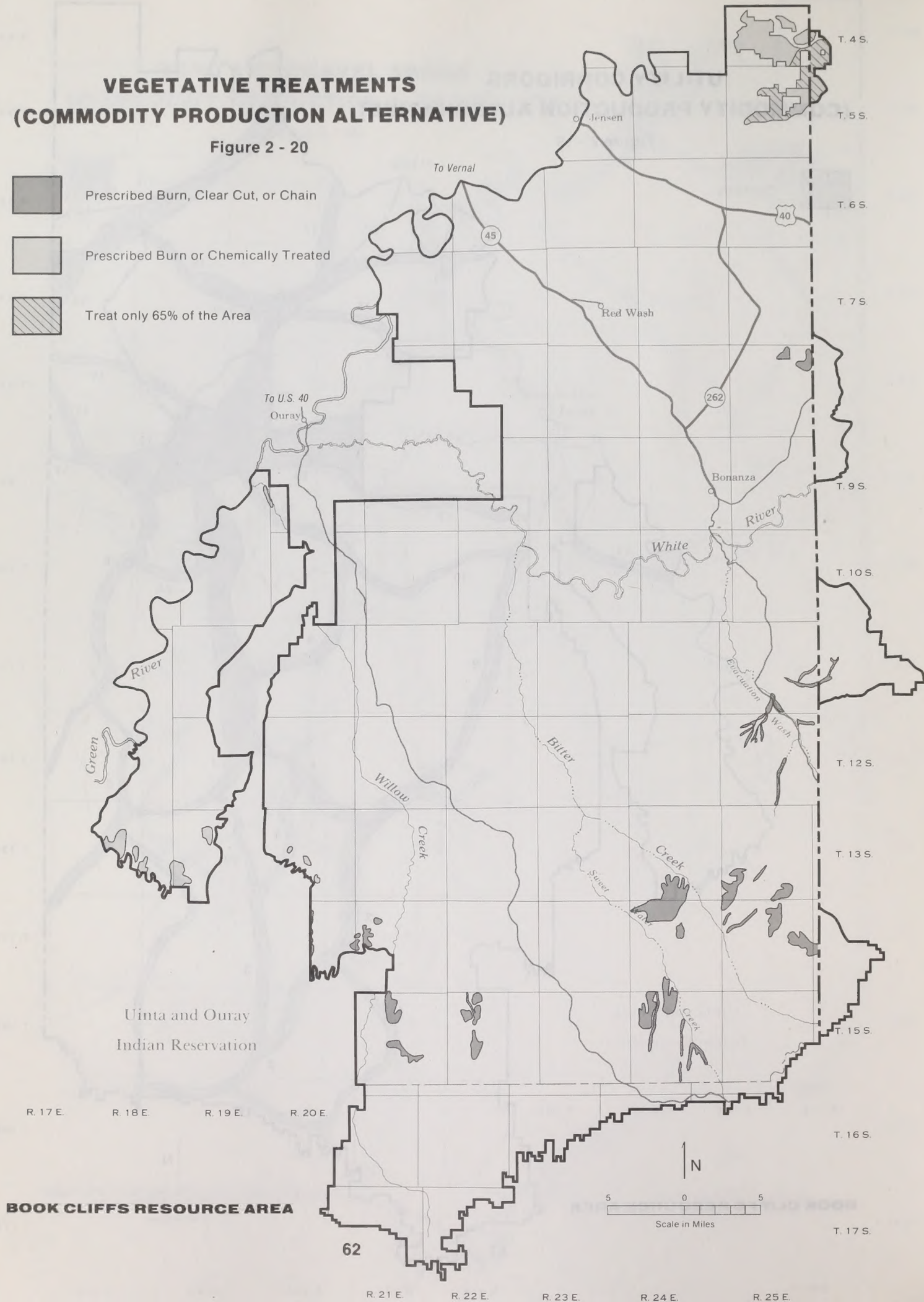




# **VEGETATIVE TREATMENTS (COMMODITY PRODUCTION ALTERNATIVE)**

Figure 2 - 20

-  Prescribed Burn, Clear Cut, or Chain
-  Prescribed Burn or Chemically Treated
-  Treat only 65% of the Area





## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

### Livestock Adjustments.

Full grazing preference (active preference plus suspended nonuse) would be the objective for authorized use under this alternative. This would be attained provided that the forage potential exists in an allotment and that minerals development operations would not impose decreases in livestock use. Full grazing preference would meet full livestock use demand for the area and would be consistent with this alternative's emphasis on domestic forage production. Data from the ecological site, condition, and soils inventory (BLM 1982a) indicates that on a general basis, full grazing preference would be within the scope of site potential for most allotments. However, on the lower elevation sites (desert and semi-desert), full preference might not be attained. On the higher elevation sites (upland and mountain), there may be potential to exceed full preference provided it is not limited by other resource uses.

The number of AUMs authorized for livestock would be 109,485. This is 6,570 AUMs more than active preference and 42,505 AUMs more than current average use.

### Range Improvements.

Under this alternative, range improvements would be developed to improve the availability of unutilized forage and to develop new forage where a potential exists to benefit livestock. Prescribed burns or chemical treatment would be used in the canyon bottoms and on upland bench sites with dense decadent stands of sagebrush (Figure 2-20). This method would also be used in areas with over mature stands of browse and in previously chained areas to prevent reinvasion of pinyon and juniper. Clear cuts, chemical treatment, or chaining would be used on sites dominated by closed stands of pinyon and juniper. Mitigating measures for the proposed treatments are described in Appendix 8 (Mitigating Measures for Land Treatments).

### Implementation Schedule.

The implementation schedule would be the same as under the Resource Protection Alternative.

### Riparian Habitat, Floodplains, and Crucial Wildlife Habitat

Actions would be the same as for the Current Management Alternative.

### Costs.

Approximately \$813,000 to \$870,000 would be used for new livestock improvements funded by BLM. This does not include cooperative projects, reconstruction or maintenance.

### Wildlife and Wild Horses

Up to 20 water projects would be developed for wildlife over the next 10 years, primarily as mitigation for losses of habitat and water sources through mineral development.

Four habitat management plans, as specified in the Resource Protection Alternative, would be prepared. A wild horse management plan would be prepared for the Hill Creek herd.

Under this alternative, seasonal and no-surface-occupancy restrictions would not be applied to big game and wild horse habitat in the BCRA.

### Woodlands

Allowable annual cut from managed pinyon-juniper stands would be 2,300 cords; from Douglas fir and cottonwood stands, 610 cords; and 820 cords from old chainings, burns and non-productive woodlands, for a total of 3,730 cords per year.

### Recreation

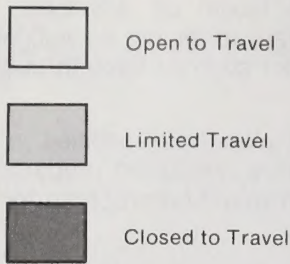
Up to 148,160 acres would be closed or limited to ORV use. Areas closed would include the Boulevard Ridge Watershed Study Area, the Book Cliffs Natural Area, and two scenic geologic areas. Vehicle use would be limited in *significant* cultural and recreational sites, critical and severe erosion areas, and *sage grouse leks*. Crucial wildlife and wild horse areas, *the White River Canyon*, the area contiguous to the Uintah and Ouray Indian Reservation, and all other areas would remain open (Figure 2-21).

Existing recreation sites that have the highest potential for development would be retained, including 4 camp sites (280 acres), one overlook (320 acres), and one geologic feature (60 acres). The U.S. Highway 40 scenic corridor would be dropped and no new corridors would be established (Table 2-2). A corridor would be established along the Green River extending 0.5 miles or line of sight, whichever is closer, from the center of the river. Within this corridor from Tabyago Canyon to Sand Wash (1,900 acres), the placement of structures, surface disturbance, or other types of visible developments would be prohibited. In the remaining area (12,500 acres), along the river between Sand Wash and Dinosaur National Monument, structures, developments, and surface disturbance would be designed to minimize impacts to visual quality standards.



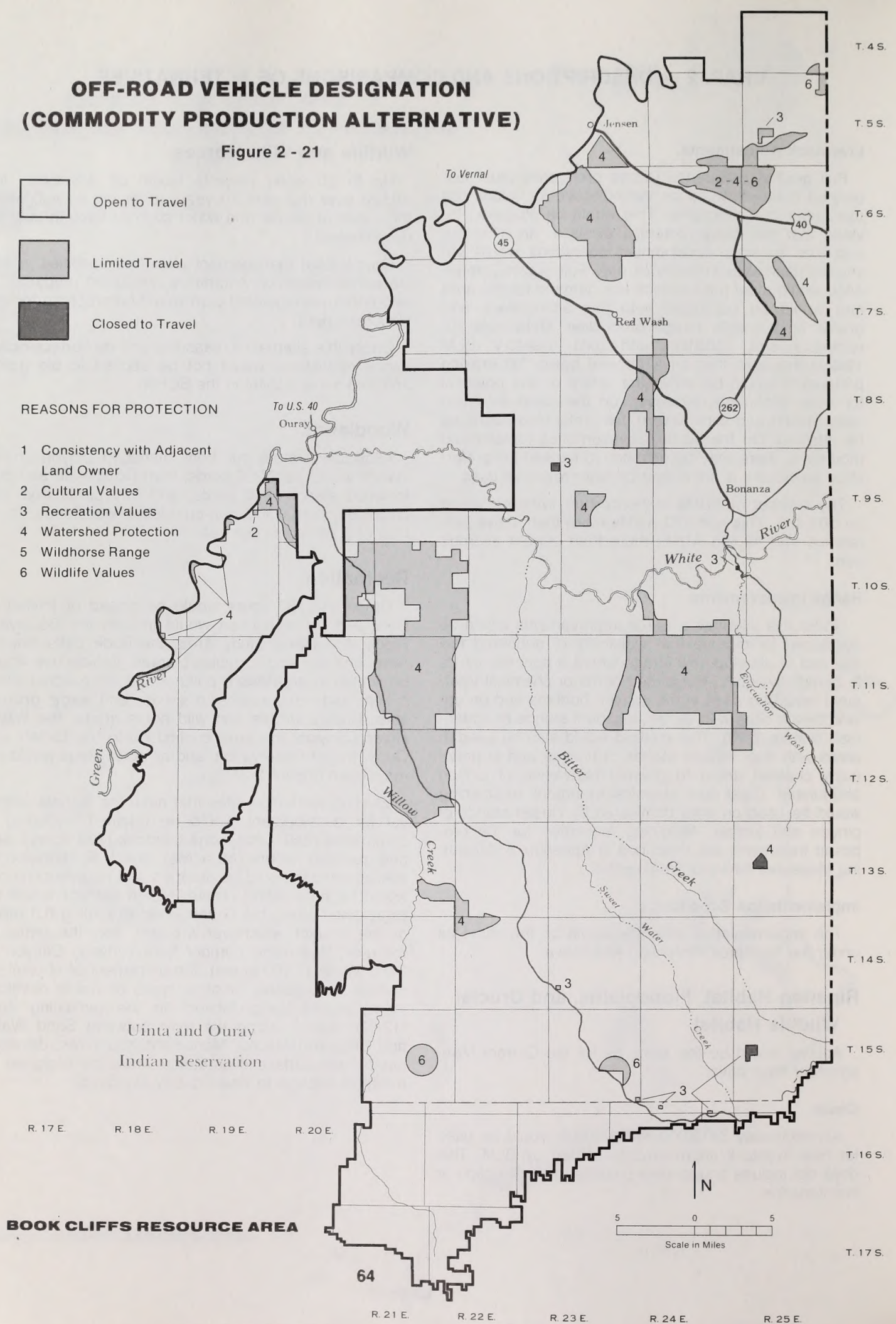
# OFF-ROAD VEHICLE DESIGNATION (COMMODITY PRODUCTION ALTERNATIVE)

Figure 2 - 21



## REASONS FOR PROTECTION

- 1 Consistency with Adjacent Land Owner
- 2 Cultural Values
- 3 Recreation Values
- 4 Watershed Protection
- 5 Wildhorse Range
- 6 Wildlife Values





## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

### Watershed

#### Treatment Measures.

Watershed treatment measures would be implemented to increase forage production on 6,400 acres in 4 allotments. About 320 detention-retention dams would be built; however, their locations are not currently known. Refer to Figure 2-6 for the location of severe and critical erosion condition areas.

Seeding detention-retention dams and utilizing runoff diversion structures and retention ponds wherever mineral developments disturb the surface, would minimize adverse impacts to soils.

### Land Tenure Adjustment

The approximately 16,000 acres available for disposal (Figure 2-7) would be small, isolated tracts, surrounded by State and private lands. *These lands meet the basic FLPMA requirements for disposal. They have been identified in this document so they can be considered in potential land exchanges or sales. Exchanges would be the preferred method of disposal. Site specific analysis would be required prior to any exchange or disposal effort.* Approximately 10,000 acres of land would be acquired if opportunities become available. These lands contain oil shale and oil and gas and would most likely be acquired through an exchange with the State of Utah. The locations of lands to be acquired or disposed of under this alternative are displayed in Figures 2-7 and 2-22.

## BALANCED USE ALTERNATIVE

### Leaseable Minerals

#### Oil and Gas.

*Implementation of this alternative provides for consideration of both mineral and renewable resource values.*

*Areas in Categories one, two, and three would be administered according to standard laws and regulations (see Appendix 4).*

*Special mitigating measures would be required for various renewable resource values. Wildlife values include: Deer fawning and elk calving areas, the Monument Ridge Deer Migration Corridor, crucial winter elk habitat such as oil chainings and burns, and sage grouse leks. Watershed values include: Floodplains, severe and critical erosion areas, perennial streams, and public water reserves. Recreation values include VRM Class II areas, three scenic travel corridors. The Green River Corridor, from the boundary of the Dinosaur National Monument to Ouray, and the White River*

*Corridor, upstream from the proposed damsite, would receive special mitigation to protect important wildlife, watershed, and recreation values. Total area affected would be approximately 460,000 acres.*

*Surface occupancy would not be allowed on approximately 16,000 acres. No surface occupancy would provide full protection for wildlife, watershed, and recreation values along the Green River Corridor, adjacent to the Dinosaur Monument, from Ouray to Tabyago canyon, and the White River Corridor, downstream from the proposed damsite. In addition, two scenic overlooks, five campsites, two geological features, the Boulevard Ridge Watershed Study Area, and the Book Cliffs Natural Area would be fully protected.*

*Leases would not be issued within the Naval Oil Shale Reserve.*

#### Oil Shale.

Approximately 42,000 acres would be made available for underground mining and 6,000 acres, for in situ development (Figure 2-24). Two to four oil shale tracts consisting of 10,500 to 21,000 acres could be leased within these areas after implementation of the RMP. Additional exploratory drilling would be required on approximately 9,500 acres which are outside of Known Oil Shale Lease Areas before a competitive leasing program would occur. Scheduling for tract delineation and size of potential tracts would be determined prior to any leasing.

Mitigation would be the same as under the Resource Protection Alternative.

#### Tar Sand.

*Both mineral and renewable resource values would be considered when making land use allocations.*

*Areas in Category one and two (Figure 2-25) would be administered according to standard laws and regulations (refer to Appendix 4 for more discussion).*

*Additional special mitigation would be required for various resource values. Wildlife values include: Deer fawning and elk calving areas, the Monument Ridge Deer Migration Corridor, and crucial winter elk habitat such as old burns and chainings. Watershed resources would include severe and critical erosion areas and perennial streams. Recreation values would include VRM class II areas that are within moderate potential areas for tar sand development. Mitigation would be developed during an environmental analysis of a proposed mining project. Mitigation could include such things as*



# POTENTIAL LANDS ACQUISITION (BALANCED USE AND COMMODITY PRODUCTION ALTERNATIVE)

Figure 2 - 22

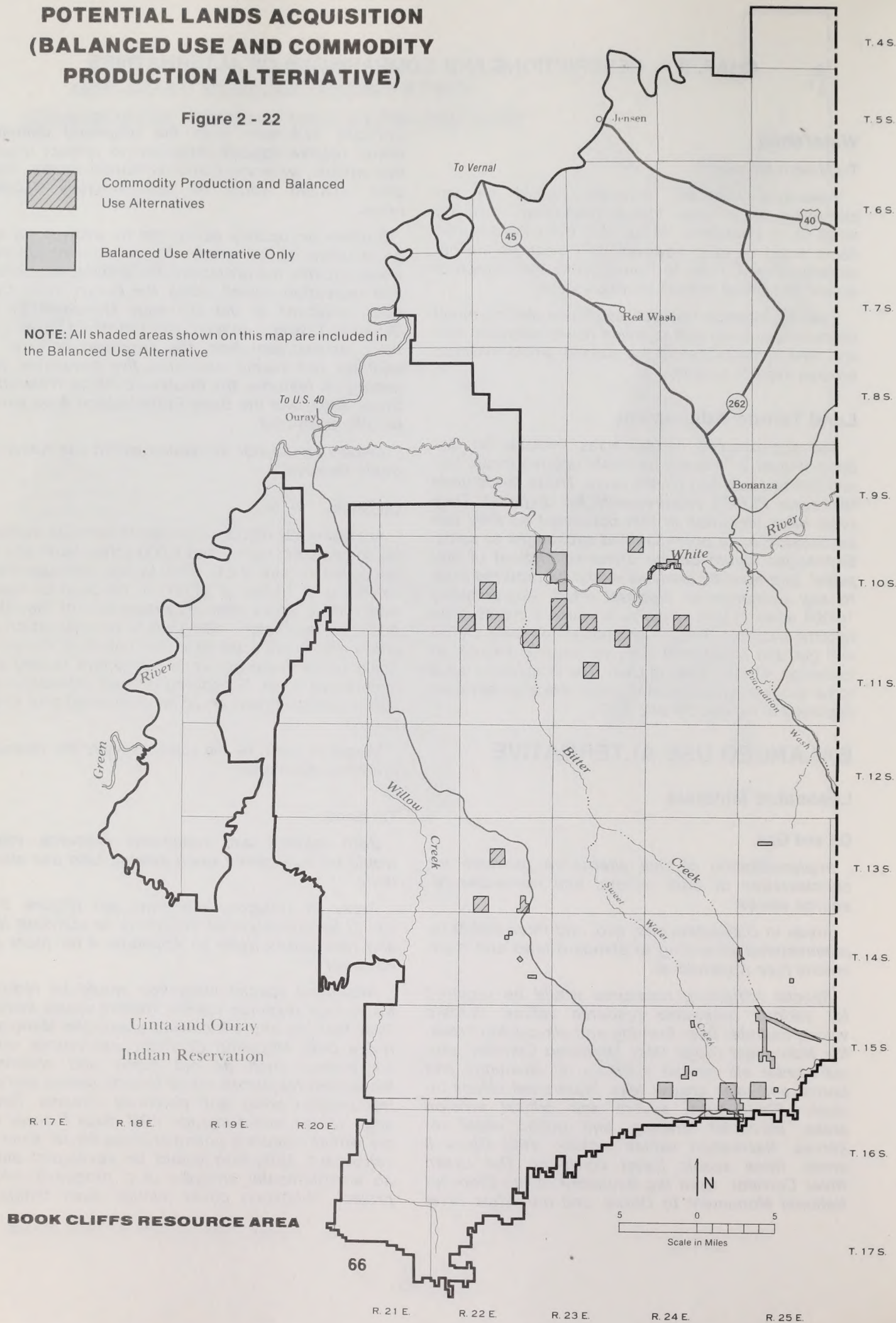


Commodity Production and Balanced  
Use Alternatives



Balanced Use Alternative Only

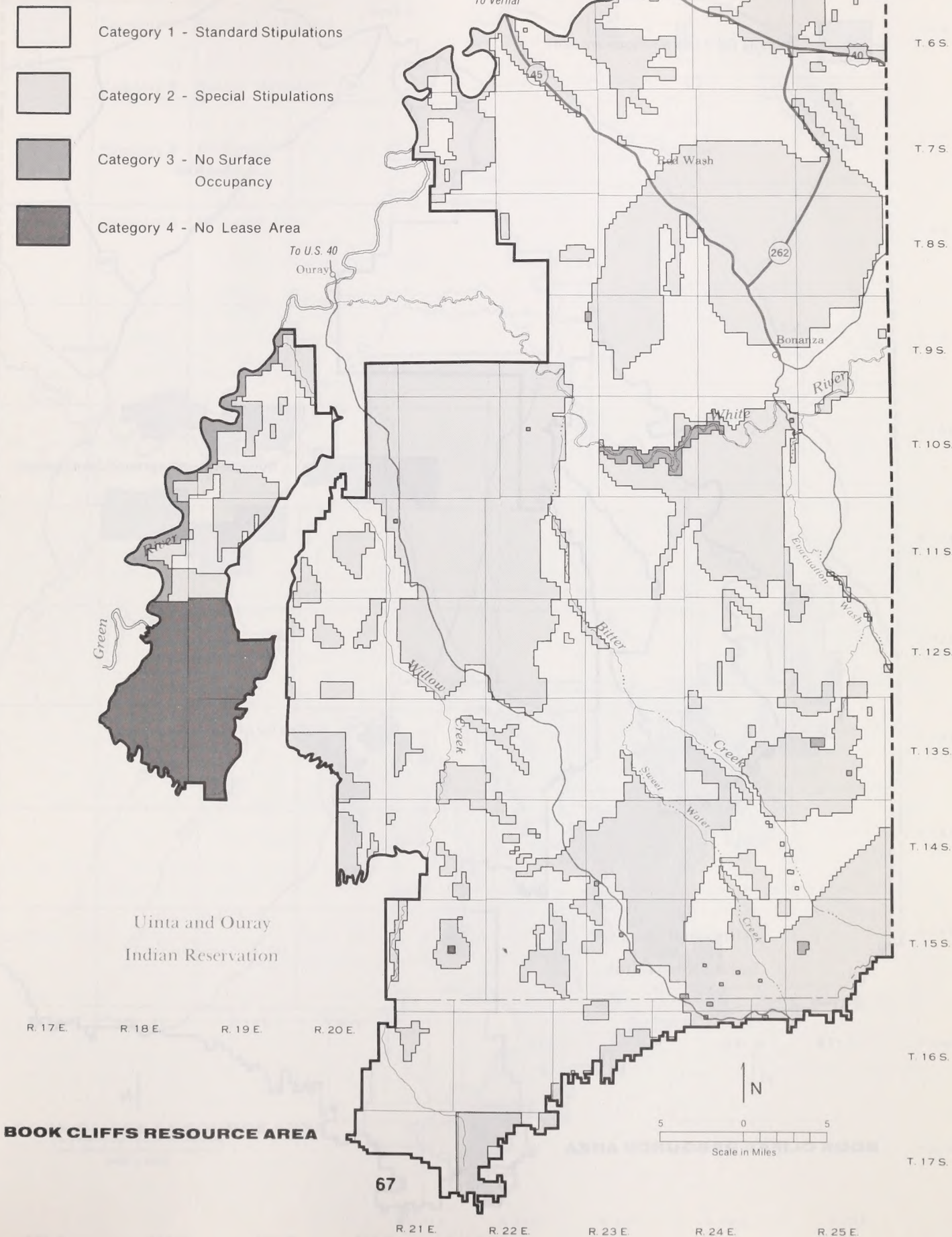
**NOTE:** All shaded areas shown on this map are included in  
the Balanced Use Alternative





# **OIL AND GAS LEASING CATEGORIES (BALANCED USE ALTERNATIVE)**

**Figure 2 - 23**



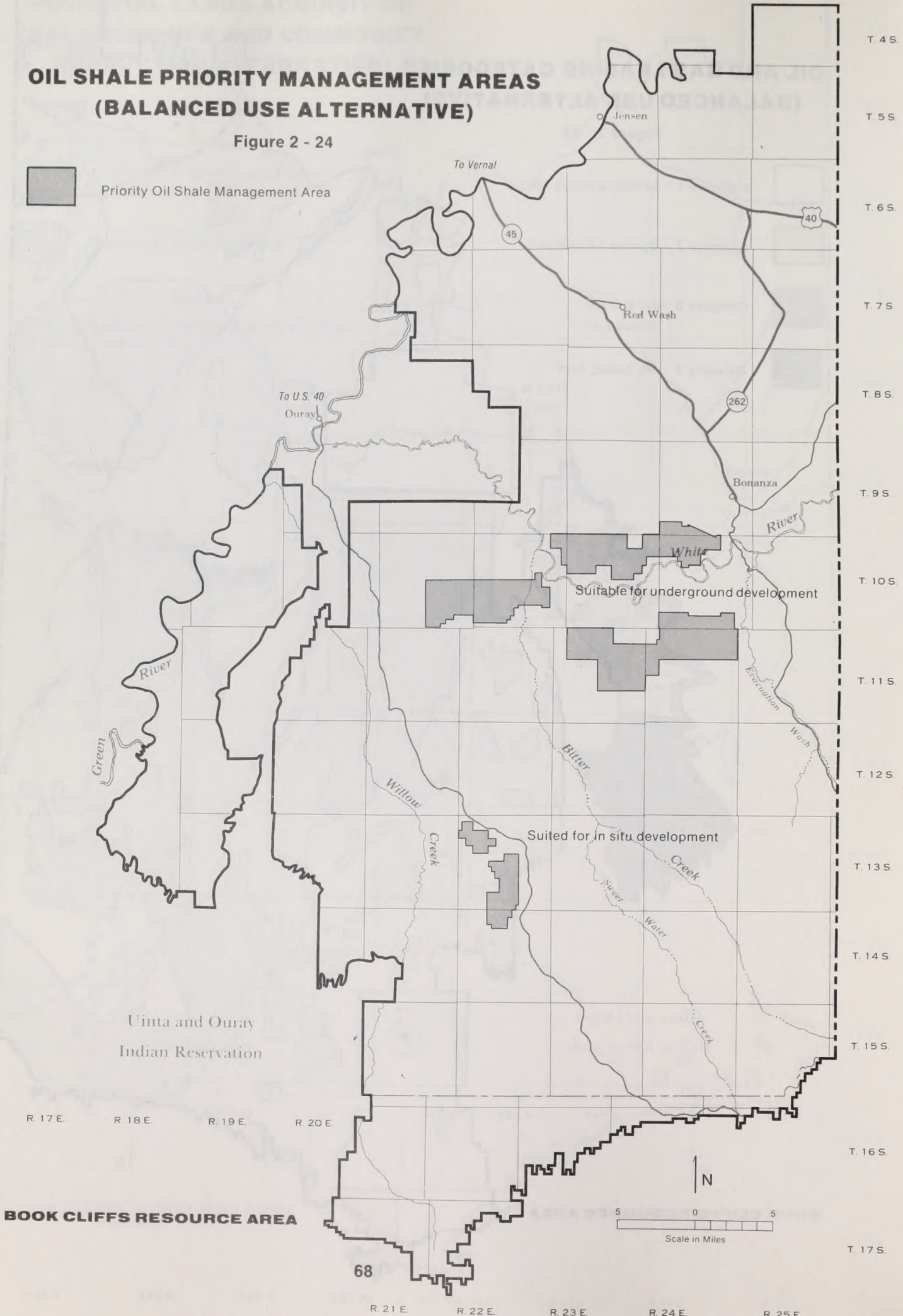


# **OIL SHALE PRIORITY MANAGEMENT AREAS (BALANCED USE ALTERNATIVE)**

Figure 2 - 24



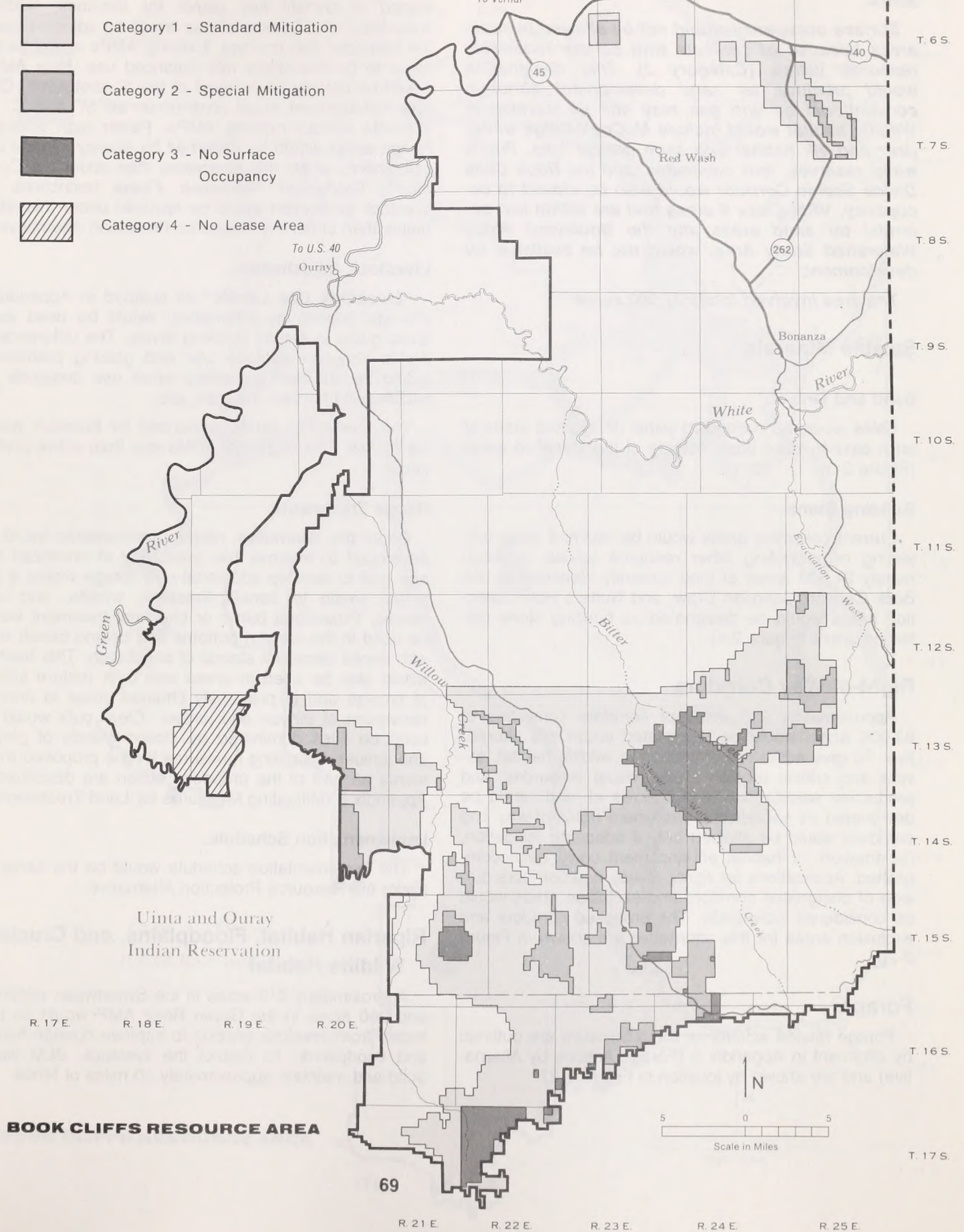
Priority Oil Shale Management Area





# TAR SAND LEASING CATEGORIES (BALANCED USE ALTERNATIVE)

Figure 2 - 25





*habitat development prior to project initiation. These areas would total approximately 72,000 acres.*

*Surface occupancy would not be allowed in some areas because of conflicts with certain renewable resource values (Category 3). This designation would preclude tar sand development although conventional oil and gas may still be developed. Wildlife habitat would include McCook Ridge winter deer and elk habitat and sage grouse leks. Public water reserves, four campsites, and the Book Cliffs Divide Scenic Corridor would also be closed to occupancy. VRM Class II areas that are within low potential tar sand areas and the Boulevard Ridge Watershed Study Area, would not be available for development.*

*The area involved totals 27,000 acres.*

### Salable Minerals

#### Sand and Gravel.

Sales would be conducted within designated areas or on a case-by-case basis outside of the identified areas (Figure 2-3).

#### Building Stone.

Current collection areas would be retained while protecting or mitigating other resource values. Approximately 21,500 acres of land currently identified as the Buck Canyon, Johnson Draw, and Nutters Hole collection areas would be designated as building stone collection areas (Figure 2-4).

### Right-of-Way Corridors

Approximately 235 miles of corridors consisting of 93,000 acres would be designated under this alternative. To give additional protection to wildlife habitat, severe and critical erosion areas, visual resources, and productive woodlands, 23,000 acres of land would be designated as exclusion areas where rights-of-way and corridors would be allowed only if adequate mitigation, reclamation, or habitat enhancement could be accomplished. Applications for rights-of-way and corridors outside of designated corridors and exclusion areas would be considered individually. The proposed corridors and exclusion areas for this alternative are shown in Figure 2-26.

### Forage

Forage related actions for this alternative are outlined by allotment in Appendix 5 (Forage Actions by Alternative) and are shown by location in Figure 2-27.

### Grazing Practices.

Under this alternative, grazing systems would be designed to benefit key plants for livestock, wildlife, watershed, etc. Season of use would be adjusted using the balanced use concept. Existing AMPs would be revised to be consistent with balanced use. New AMPs would be developed on most of the "I" allotments. Current management would continue on all "M" and "C" allotments without existing AMPs. Fewer high potential forage areas would be disturbed by energy mineral developments under this alternative than under the Commodity Production Alternative. Fewer restrictions on livestock production would be required under this alternative than under the Resource Protection Alternative.

### Livestock Adjustments.

"**Livestock Use Levels**" as outlined in Appendix 5 (Forage Actions by Alternative) would be used as a basic guide in setting stocking levels. The difference in AUMs between average use and grazing preference would be sufficient to satisfy other use demands for wildlife, wild horses, minerals, etc.

The number of AUMs authorized for livestock would be **81,316**. This is **21,599** AUMs less than active preference.

### Range Treatments.

Under this alternative, range improvements would be developed to improve the availability of unutilized forage and to develop additional new forage where a potential exists to benefit livestock, wildlife, and wild horses. Prescribed burns or chemical treatment would be used in the canyon bottoms and upland bench sites with dense decadent stands of sagebrush. This method would also be used in areas with over mature stands of browse and in previously chained areas to prevent reinvasion of pinyon and juniper. Clear cuts would be used on sites dominated by closed stands of pinyon and juniper. Mitigating measures for the proposed treatments as part of the proposed action are described in Appendix 8 (Mitigating Measures for Land Treatments).

### Implementation Schedule.

The implementation schedule would be the same as under the Resource Protection Alternative.

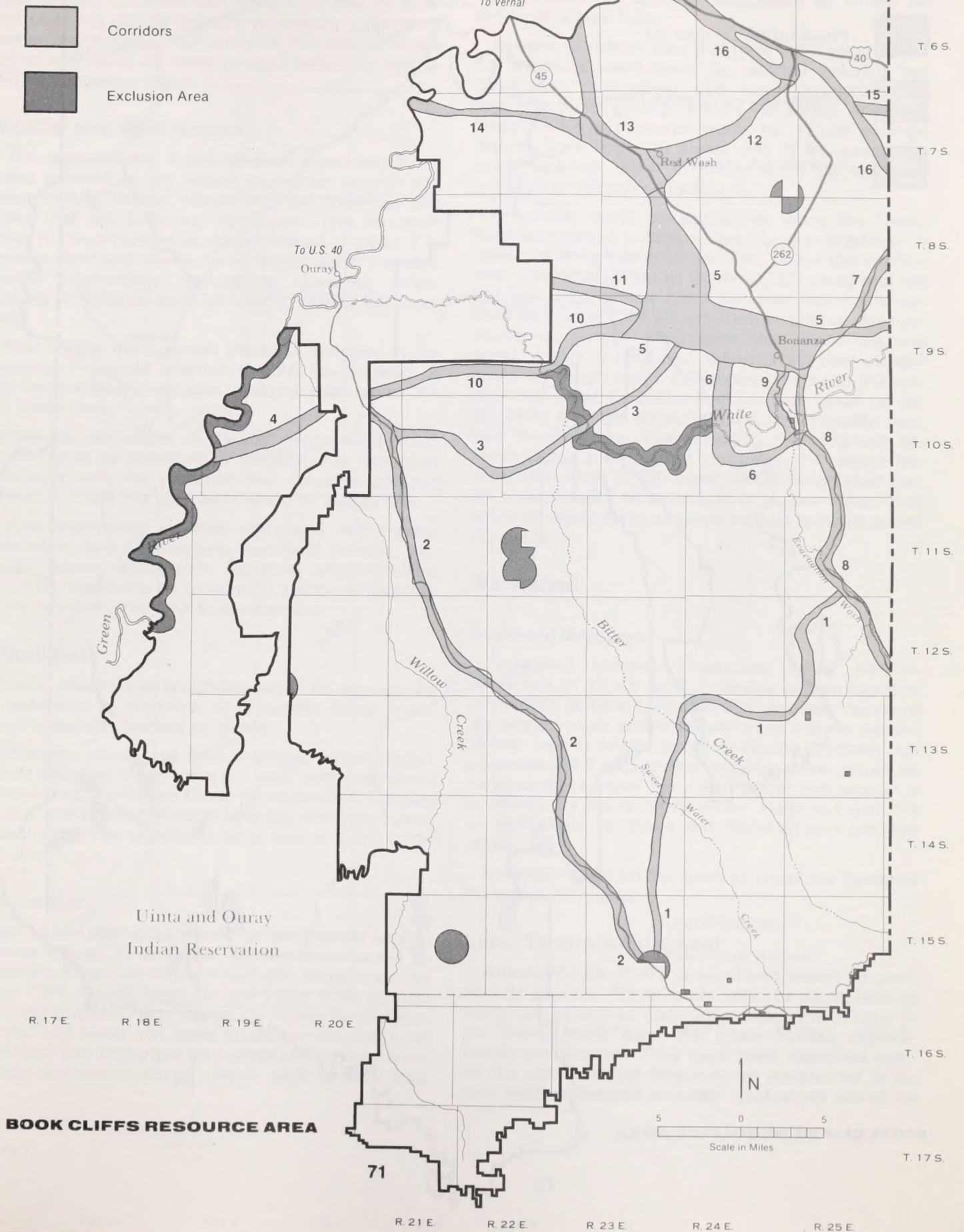
### Riparian Habitat, Floodplains, and Crucial Wildlife Habitat

Approximately 210 acres in the Sweetwater allotment and 260 acres in the Green River AMP would be protected from livestock grazing to improve riparian habitat and floodplains. To restrict the livestock, BLM would build and maintain approximately 10 miles of fence.



# UTILITY CORRIDORS (BALANCED USE ALTERNATIVE)




Figure 2 - 26

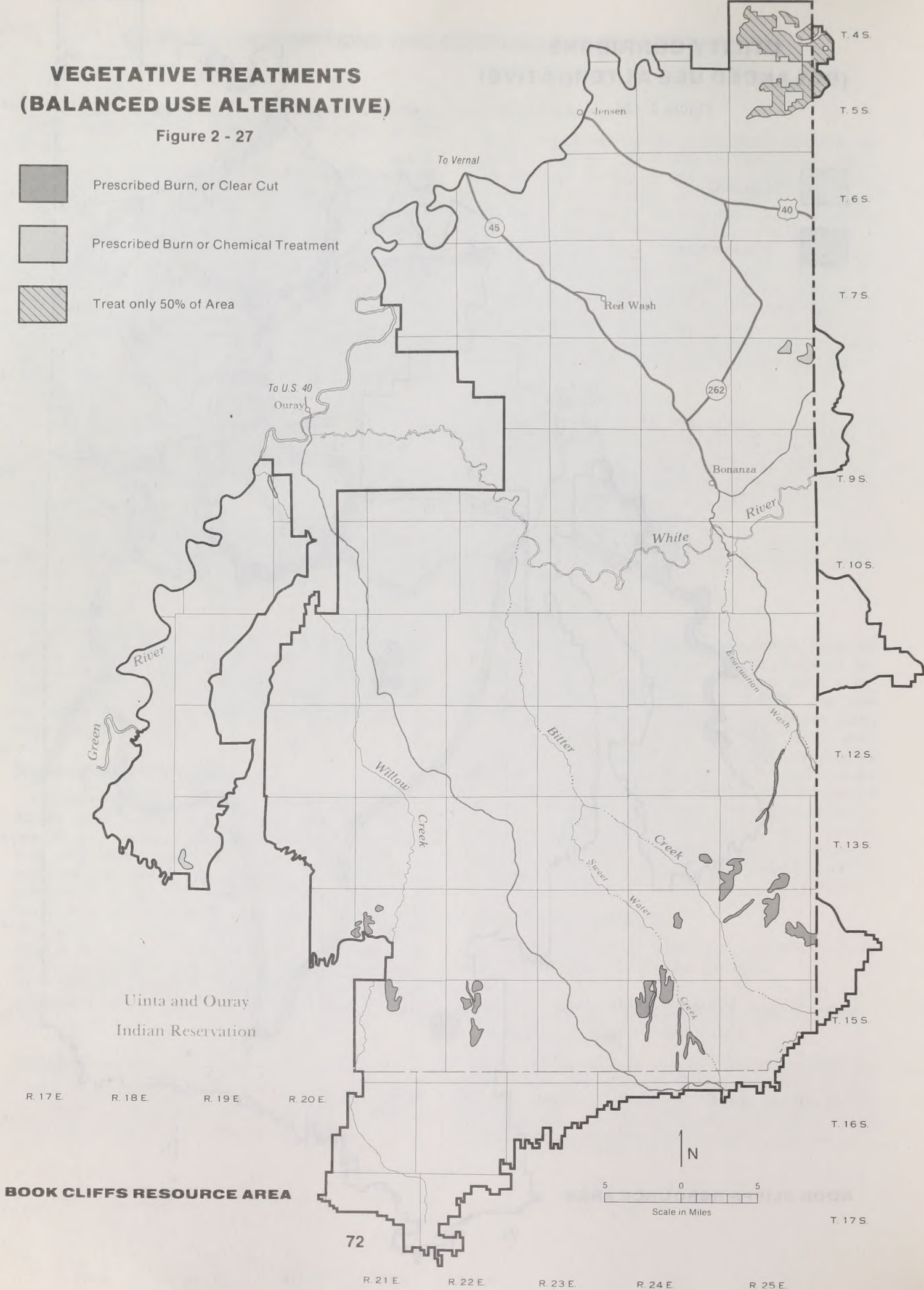




# VEGETATIVE TREATMENTS (BALANCED USE ALTERNATIVE)

Figure 2 - 27

-  Prescribed Burn, or Clear Cut
-  Prescribed Burn or Chemical Treatment
-  Treat only 50% of Area





## CHAP. 2 — DESCRIPTIONS AND COMPARISONS OF ALTERNATIVES

### Costs.

Approximately **\$992,000** to **\$1,090,000** would be used for new livestock improvements funded by BLM. This does not include cooperative projects, reconstruction or maintenance. The costs for this alternative are higher only because more projects would be accomplished to improve forage.

### Wildlife and Wild Horses

The approximately 9,000 acres of prescribed burns would concentrate on mature sagebrush canyon bottoms, mature browse stands and old chainings and burns that are becoming overgrown. Two thousand acres of pinyon/juniper would be chained or clearcut to improve deer and elk forage in crucial winter habitats. Natural regeneration, mechanical reseeding and/or tubeling transplants could be used to reestablish vegetation.

Four habitat management plans, as specified in the Resource Protection Alternative, would be prepared. A wild horse management plan would be prepared for the Hill Creek herd.

Seasonal restrictions on mineral development would be the same as described in the Resource Protection Alternative with the exception that acreages afforded protection under this alternative would be slightly less.

Surface-disturbing activities associated with mineral exploration and development, woodland harvest, etc. would require reclamation. Disturbed wildlife habitat would be required to be returned to a state comparable to that which existed prior to development.

### Woodlands

Public utilization of woodlands would be encouraged in preference to chainings or prescribed burns to improve forage for livestock or wildlife.

Allowable annual cut from managed pinyon-juniper stands would be 3,115 cords per year; from cottonwood stands along the Green River, 70 cords; from Douglas fir, 265 cords; and 820 cords from old chainings, burns, and unproductive woodlands for a total of 4,270 cords per year.

### Recreation

**Up to 554,000 acres would be designated as limited or closed to ORV use. Closed areas** would include the Boulevard Ridge Watershed Study Area, the Book Cliffs Natural Area, and the White River Corridor from the proposed dam site to the Indian Reservation. Critical wild horse and **most crucial** wildlife areas, recreational and **important and accessible** cultural sites, critical and severe erosion areas, **sage grouse leks**,

and three scenic corridors would be included in the limited category. Lands next to the Uintah and Ouray Indian Reservation would be designated as limited for ORV use (Figure 2-28).

Existing recreation sites that have the highest potential for development would be retained including five camp sites (320 acres), **two** scenic overlooks (**330** acres), and one geologic feature (60 acres). Additional areas for future protection would be: 1) one geologic feature, Duck Rock (10 acres), and 2) the size of the scenic overlook, Point of Pines, would be increased from 320 to 480 acres (Table 2-2).

A corridor would be established along the Green River extending 0.5 miles or line of sight, whichever is closer, from the center of the river. Within this corridor from Tabyago Canyon to Ouray (9,150 acres) and the first four miles of river below Dinosaur National Monument (320 acres), the placement of structures, developments, or surface disturbance that would degrade scenic quality or recreation values of the river corridor would not be permitted. Developments outside this corridor that would be visible from the river would be designed to minimize impacts to the visual quality standard for that area. The remaining river segment between Ouray and to within four miles of Dinosaur National Monument (4,930 acres) would be afforded partial protection. All developments or surface disturbance would be designed to minimize impacts to visual quality standards.

### Watershed

#### Treatment Measures.

Watershed treatment measures would be implemented on 12,300 acres in severe erosion condition and 66,600 acres in critical erosion condition. Acreages are located on 23 allotments with more than 10 percent of their area in severe or critical erosion condition. Approximately 3,900 detention-retention dams would be constructed; however, the exact number and location of structures are not currently known. Refer to Figure 2-6 for the location of severe and critical erosion condition areas.

Mitigation would be the same as under the Resource Protection Alternative.

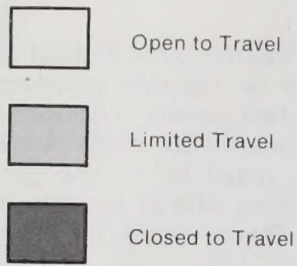
### Land Tenure Adjustment

**Approximately 16,570 acres of land would be** available for disposal. **These lands** would be small, isolated tracts, surrounded by State and private lands (Figure 2-7). **These lands meet the basic FLPMA requirements for disposal. They have been identified within this document so they may be considered in future land exchanges or sales. Exchanges would be**



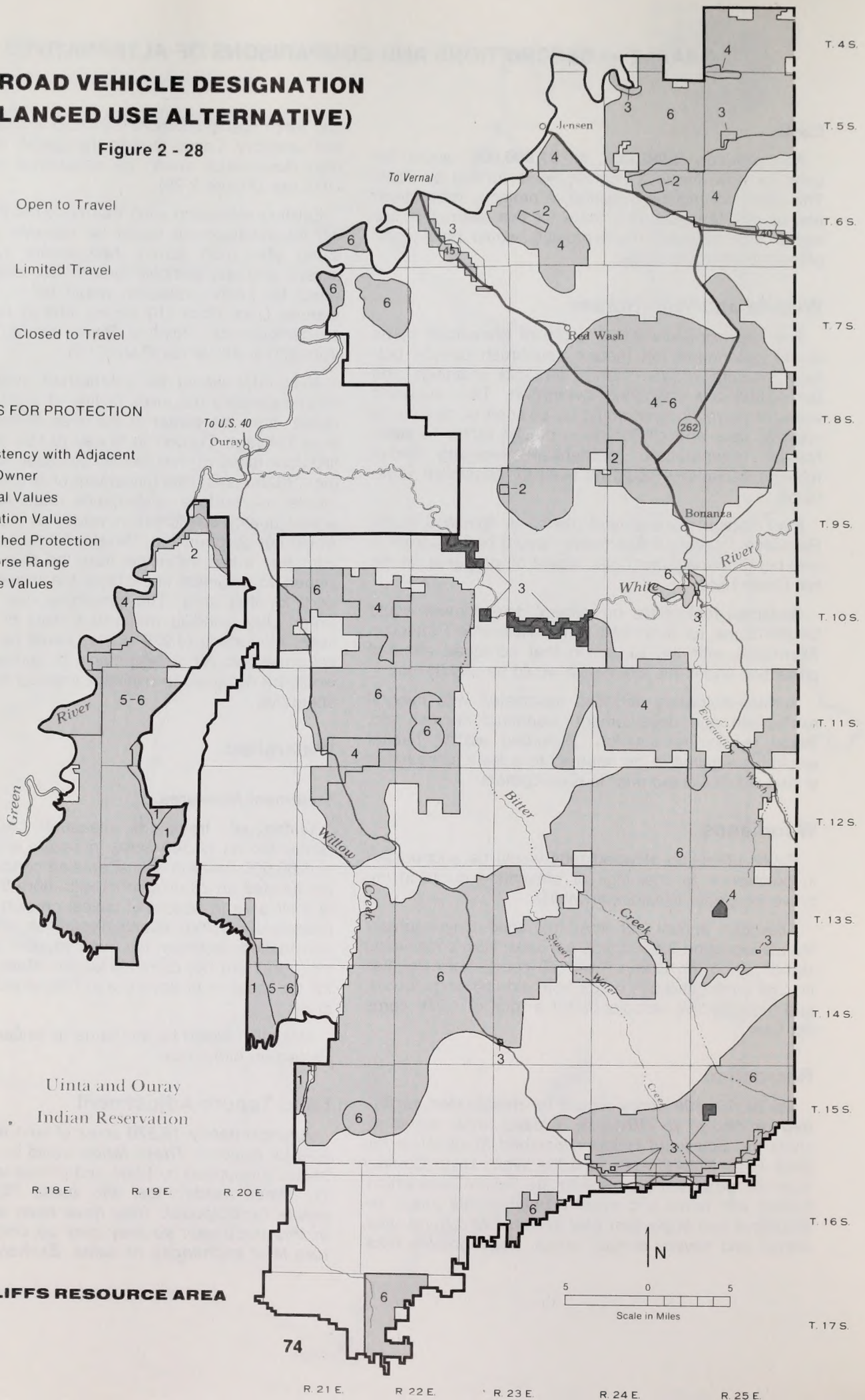
# OFF-ROAD VEHICLE DESIGNATION (BALANCED USE ALTERNATIVE)

Figure 2 - 28



## REASONS FOR PROTECTION

- 1 Consistency with Adjacent Land Owner
- 2 Cultural Values
- 3 Recreation Values
- 4 Watershed Protection
- 5 Wildhorse Range
- 6 Wildlife Values





*the preferred method of disposal. Site specific analysis would be required prior to any exchange or disposal effort.*

*Approximately 18,700 acres of land would be acquired to facilitate various aspects of public land management should opportunities become available (Figure 2-22).*

### MANAGEMENT GUIDANCE COMMON TO ALL ALTERNATIVES

The following section provides, by program, the management guidance common to all alternatives and thus constitutes a part of each alternative. It includes past management decisions that would continue, proposed management decisions that would be implemented in all alternatives, and procedures and policy common to all alternatives. It is provided here to avoid repetition in Table 2-1.

#### Minerals

##### Leasable Minerals

##### Oil and Gas

Administrative and technical capabilities for oil and gas operations have been established in the Vernal District. The following procedures would be continued under the RMP.

Preliminary environmental reviews and notices of staking would be processed at the district and area levels. Onsite inspections, processing of needed rights-of-way, and field activities for other requests or permits would be administered at the area level.

Applications for permits to drill (APD), sundry notices, other applications to perform work, and compliance reports would be processed at both the district and area levels. Onsite inspections, environmental review, determinations, conditions of approval, and other aspects of the processing of APDs and sundry notices would be handled at the district and area levels.

Drainage determinations and delineation of KGSs would be handled at the state and district levels.

Future oil and gas activities would continue to be subject to further environmental review. Special stipulations for protection of renewable resource values would be developed through an activity plan and attached to future oil and gas leases.

##### Tar Sand

Administrative and technical capabilities for managing tar sand operations are presently at the Utah State Of-

fice although these responsibilities could be delegated in the future to the Vernal District.

Tar sand development would be managed in accordance with the 43 CFR 3140 regulations which would require a detailed development plan as outlined in 43 CFR 3570. These regulations promote orderly prospecting, exploration, testing, development, mining and processing operations and require operating procedures which would avoid, minimize, or correct damage to the environment.

Combined hydrocarbon leases could be obtained in two possible ways. Prior to November 16, 1983, existing oil and gas leases in Special Tar Sand Areas (STSA) could be converted to a combined hydrocarbon lease (CHL). An approved CHL would provide the leaseholder the opportunity to develop either oil and gas and/or the tar sand resource. Applications to convert existing oil and gas leases to CHL's within the BCRA totalled approximately 35,000 acres within PR Spring STSA, 4,000 acres within Hill Creek STSA, and 800 acres within Raven Ridge-Rim Rock STSA. A second method would be through a competitive leasing program. No schedule to offer tracts for competitive lease has been developed.

Site specific environmental documents would be prepared prior to any development.

Combined hydrocarbon leases would be issued using one category system. Oil and gas categories have been separated from tar sand categories in this document to clarify which type of energy mineral resource development may result in the final constraints placed upon lease development (Appendix 4, Specialized Mineral Terminology).

##### Oil Shale

Lease administration of U-a and U-b (White River Shale) including all technical review and compliance would be handled through the BLM Oil Shale Office in Grand Junction, Colorado. These responsibilities could be delegated in the future to the Vernal District Office.

The oil shale program for future leasing is currently being developed with environmental, industry, and governmental input. The procedures and policies would probably involve tract delineation; environmental review; a competitive lease program, including local and state government input; and a lessee's submittal of a detailed development plan (43 CFR 3570). These plans would provide detailed information concerning all aspects of mining and development along with detailed measures for protection of the environment. They would be subject to BLM approval.

##### Gilsonite

Gilsonite leases would be handled through the Utah



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State Office although these responsibilities could be delegated to the Vernal District in the future.

Future gilsonite leasing would be made through a competitive *or preference right* leasing program. Lease approval would require submittal of an acceptable mining and reclamation plan subject to environmental review prior to any development.

### Locatable Minerals

The general mining law of 1872 (17 Stat. 91) authorized placer and lode mining claims to be located by a procedure that is largely unchanged to this day. In 1930, it became apparent that mining claims located in lands considered valuable for oil shale posed a potential encumbrance against future oil shale development. Subsequently, lands considered valuable for oil shale were withdrawn from appropriation under the general mining laws. Approximately 75 percent of the BCRA remains under an oil shale withdrawal and is not open to entry.

Mineral exploration and development would be regulated in accordance with the 43 CFR **3809** regulations. These regulations apply to mining activities from claims made under the authority of the 1872 mining law, as amended. These regulations establish procedures to prevent unnecessary or undue degradation of public lands. A notice giving a description of the operation and a reclamation plan would be required for disturbances of 5 acres or less per year. A detailed plan of operations, including a reclamation plan would be required for disturbances of more than 5 acres per year or in areas closed to ORV use. Environmental assessments would be prepared in response to all plans of operations. Environmental review, approval of plans, and compliance would be administered at the area level.

### Salable Minerals

#### Sand and Gravel

Environmental review would be required prior to any development with sales and compliance administered at the area level.

#### Building Stone

Building stone would be sold in accordance with an activity plan developed following the RMP.

### Land Tenure Adjustments

#### Disposals

The Federal Land Policy and Management Act requires that public lands be retained in Federal owner-

ship unless, as a result of land use planning, it is determined that disposal of a particular parcel would serve the national interest. FLPMA also provides criteria for use in categorizing public land for retention or disposal and for identifying acquisition and disposal priorities. All parcels identified within the alternatives meet the basic FLPMA criteria for disposal. All other public lands not identified for disposal would remain in public ownership and be managed by the BLM under its multiple use policy.

Public land, within disposal areas, would be made available for disposal through sales or exchanges although no sales or exchanges would occur without further environmental review. The environmental review would consider several factors when specific adjustment proposals are received. These would include public resource values, including, but not limited to, endangered and threatened and sensitive species habitat, riparian areas, fisheries, nesting/breeding habitat for game animals, key big game seasonal habitat, developed recreation and recreation access sites, visual resource management, watershed, energy and mineral potential, cultural resources, wilderness study areas, statutorily-authorized designations, accessibility of the land for public uses; amount of public investments in facilities or improvements and the potential for recovering those investments; difficulty or cost of administration (manageability); suitability of the land for management by another Federal agency; significance of the decision in stabilizing business, social and economic conditions, and/or lifestyles; encumbrances, including, but not limited to, recreation and public purposes (R & PP) and small tract leases, withdrawals, or other leases or permits, mining claims, consistency of the decision with cooperative agreements and plans or policies of other agencies; and suitability and need for change in land ownership or use for purposes including, but not limited to, community expansion or economic development, such as industrial, residential, or agricultural (other than grazing) development.

#### Acquisitions

Land to be acquired by the BLM through exchanges generally must be located in areas identified for retention. In addition, acquisition of such land should meet at least one of the following conditions: 1) facilitate access to public land and resources, 2) maintain or enhance important public values and uses, 3) maintain or enhance local social and economic values, or 4) facilitate implementation of other aspects of this RMP. ***All lands identified in this document meet one or more of the above criteria.***

#### Withdrawal Review

Review of existing withdrawals including reclamation, oil shale, and powersite would be an ongoing process, scheduled to be completed in 1991.



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### Rights-of-Way

Types of utilities which could be located within a corridor include electric transmission facilities, pipelines, significant canals, ditches and conduits, railroads, electric communication and microwave sites, communication lines, and highways.

Authorization, including environmental review, of rights-of-way would be handled on a case-by-case basis with approximately 75 to 100 rights-of-way processed annually in the BCRA.

### Land Use Authorizations

Land use authorizations such as agricultural leases would be processed on a case-by-case basis as the need arises. Land use permits for a wide variety of uses would be processed regularly on a case-by-case basis.

### Desert Land Entries

Desert land entries would be processed periodically on a case-by-case basis as the need arises.

### Trespass Abatement

Cases of unauthorized use of public land would be processed as necessary. Highest priority would be given to abatement of the following unauthorized uses: 1) new unauthorized activities or uses where prompt action would minimize damage to public resources and associated costs; 2) cases where delay could be detrimental to authorized users; 3) cases involving special areas, sensitive ecosystems, and resources of national significance; and 4) cases involving malicious or criminal activities.

### Recreation

Dispersed recreation opportunities, where visitors would have freedom of recreational choice with minimal regulatory constraints, would continue to be provided for the public. Recreation facilities receiving the heaviest use would receive first priority for maintenance funds. Investment of public funds for new recreation developments would be permitted only on land identified for retention in public ownership, where demand for such sites is high and where recreation objectives would not be attained without development. The basic management objective for recreation management shall be to provide for unstructured recreation activities, to be managed under the Bureau's basic stewardship responsibilities.

### Off-Road Vehicle Use (ORV)

It is BLM policy that planning for ORV use is an integral part of the planning system with decisions to designate Federal lands as either "open", "closed", or "limited" for vehicle use. After selection of off-road vehicle designations in the Final RMP, an Off-road Vehicle Implementation Plan would be developed within 1 year of the Final RMP if funding is available.

### Wildlife

Impacts to fish and wildlife habitat would continue to be evaluated on a case-by-case basis as a part of project level planning. Such evaluation would consider the significance of the proposed project and the sensitivity of fish and wildlife habitat in the affected area. Mitigations would be attached as appropriate to assure compatibility of projects with management objectives for fish and wildlife habitat. Habitat improvement projects would be implemented where necessary to stabilize and/or improve unsatisfactory or declining wildlife habitat condition.

Habitat Management Plans (HMPs) would be prepared upon approval of the Final RMP. The HMPs would be prepared for each wildlife herd unit in accord with the wildlife management actions to be implemented under the selected alternative. Where circumstances warrant, wildlife habitat work and related fund expenditures could proceed independently upon approval of the State Director. However, where applicable, HMPs and AMPs would normally be coordinated in preparation and implementation to the fullest extent possible to avoid duplication of effort and undue costs.

### Endangered, Threatened, and Sensitive Habitat

No activities would be permitted in habitat for endangered or threatened species that would jeopardize the continued existence of such species.

Whenever possible, management activities in habitat for endangered, threatened, or sensitive species would be designed to benefit those species through habitat improvement.

The BLM would complete either a clearance (minor actions and projects) or a biological assessment (major actions and projects requiring an EIS) for endangered or threatened species before implementing projects. Any project or action that could affect an endangered or threatened species or its habitat would be determined through the clearance or biological assessment process and would require a consultation with the U.S. Fish and Wildlife Service as required by Section 7 of the Endangered Species Act of 1973 as amended.

### Big Game and Upland Game Habitat

Sufficient forage and cover would be provided for wildlife populations on seasonal habitat.



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Rangeland improvements generally would be designed to benefit or accommodate both wildlife and livestock. Vegetation manipulation projects would be designed to minimize damage to and improve wildlife habitat. Existing fences could be modified, and new fences would be built to allow wildlife passage. Water would be provided, where practical, in allotments (including rested pastures) during seasonal periods of need for wildlife.

### Riparian/Fisheries Habitat

Management actions within floodplains and wetlands would include measures to preserve, protect, and if necessary, restore their natural functions (as required by Executive Orders 11988 and 11990). Management techniques would be used to minimize the degradation of stream banks and the loss of riparian vegetation.

Management activities in riparian zones, including mitigating surface disturbing activities, would be designed to maintain or, where possible, improve riparian habitat condition.

### Soils, Water, and Air

Soil, water, and air resources would continue to be evaluated on a case-by-case basis on non-Bureau initiated projects and in project level planning. Such an evaluation would consider the significance of the proposed project and the sensitivity of soil, water, and air resources in the affected area. Stipulations would be attached as appropriate to ensure compatibility of projects with soil, water, and air resource management.

Watershed Management Plans (WMPs) would be prepared upon approval of the Final RMP. The WMPs would usually be prepared for a geographical area with similar watershed problems and outline specific actions to be implemented in achieving specific objectives. Watershed expenditures could also be made in areas of approved AMPs and HMPs where specific actions are identified to solve watershed problems.

Soils would be managed to maintain productivity and to minimize erosion. Management techniques that could be used to maintain soil productivity and minimize soil erosion include treatments designed to increase vegetation cover and gully plugs to reduce head cutting.

On projects that may significantly affect water quality, consultation with State of Utah agencies would be made to assure protection of existing water quality, consistent with the Colorado River Basin Salinity Control Act and state water quality standards for stream segments within the BCRA. Water quality monitoring would be undertaken by BLM or required of project sponsors to assure compliance.

### Forestry

Fuelwood, cedar posts and other woodland products would be available for harvest by the public from the public lands. As a general rule, charges would be made for these products. Free use could be authorized on lands where the material has no market value and demand is small. Stipulations designed to protect visual resources, wildlife habitat, and other resource values would be attached to permits at time of sale.

Upon approval of the RMP, woodland management plans would be prepared outlining specific actions to be implemented to achieve objectives. Specific actions such as establishment of green wood cutting areas, access needs, estimation of products to be harvested, signing needs, etc., would be identified in the activity plan phase.

### Pest Control

*The BLM would allow control of insects, predators, noxious weeds, and diseases on public lands in cooperation with Federal, State, and local government control agencies, on a case-by-case basis.*

### Allotment Categorization

All allotments have been placed in one of three basic management categories: (Improvement (I), Maintenance (M), Custodial (C)), based primarily on current resource conditions and potential for improvement (specific criteria for categorization of allotments are outlined in Appendix 3 (Allotment Management Category Criteria)). "I" category allotments are those having a need and potential for "improvement" thru management, "M" category allotments are those to be managed to "maintain" current satisfactory conditions, and "C" category allotments are those to be managed on a "custodial" basis to prevent resource deterioration.

The same basic categorization criteria and ratings for the respective allotments are used for each of the alternatives. Under each alternative, the process is dynamic, i.e. the ratings would be subject to change as management practices or other factors alter the category into which the respective allotments would fall.

Under all alternatives, initial categorization would be 25 "I" allotments, 18 "M" allotments, and 11 "C" allotments.

### Allotment Management Plans

Allotment management plans are commonly used to present, in detail, the types of changes required in an allotment, and to establish a schedule for implementation. Actions set forth under the allotment management plans that affect the environment would be analyzed



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prior to their implementation. The proposal, however, may be altered to mitigate adverse impacts in the future. The priorities for completing AMPs would be in line with the allotment categorization process.

### Stocking Levels and Adjustments

In reviewing the target stocking level figures and other recommended changes, it is emphasized that the target AUM figures are not final stocking levels. Rather, all livestock use adjustments would be implemented through documented mutual agreement or by decision. When adjustments would be made through mutual agreement, they could be implemented once the Rangeland Program Summary has been issued (subject to a 30-day protest period). When livestock use adjustments would be implemented by decision, it would be based on operator consultation and monitoring of resource conditions. Current BLM policy emphasizes the use of a systematic monitoring program to determine the need for livestock adjustments.

The Federal regulations that govern changes in allocation of livestock forage provide specific direction for livestock use adjustments implemented by decision (43 CFR 4110.3-1 and 43 CFR 4110.32). The regulations specify that permanent increases in livestock forage "shall be implemented over a period not to exceed 5 years..." and that decreases in livestock forage "shall be implemented over a 5-year period...". The regulations do provide for decreases to be implemented in less than 5 years when 1) the downward adjustment is 15 percent or less of the "authorized active grazing use for the previous year", 2) an agreement is reached to implement the adjustment in less than 5 years, or 3) a shorter implementation period is needed to sustain resource productivity.

### Monitoring

The "Five Year Implementation and Monitoring Program", required by current range policy to determine proper stocking levels for livestock grazing, would be completed by September 1989.

Monitoring activities to determine the effect of the various management practices on the soil and vegetative resource will be carried out for all alternatives. The same basic procedures will be followed. However, the frequency, intensity, and particular kind of studies will vary between alternatives. For instance, under the Current Management Alternative, emphasis would be placed on the "I" allotments, which have resource problems. "M" and "C" allotments would also be monitored but commensurate with district capabilities. Under the Resource Protection Alternative, emphasis would be placed on wildlife, watershed, and wild horse aspects. The kind of study and area of concentration would vary accordingly. Under the Commodity Production Alternative, emphasis would be placed on maximizing livestock

production. Under the Balanced Use Alternative, emphasis would be similar to the Current Management Alternative.

### Allotment Evaluation Program

Periodically, each allotment will be evaluated with respect to resource conditions, management practices, and facilities. The evaluation will involve an analysis of monitoring data including climatological data. It may also include range inspection tours by BLM and affected users to jointly evaluate on-the-ground conditions. Any necessary adjustments in stocking levels or other management practices including changes or additions to existing management facilities would be based on the allotment evaluation.

The frequency and intensity of evaluations would be commensurate with resource values and use level conflicts relative to the "M", "I", or "C" category assigned to the allotment.

### Cost Estimates

Under all alternatives, range improvement costs are based on district averages as depicted below (BLM 1984):

Reservoirs	\$ 2,000 each
Seeps or Springs	\$ 3,000 each
Guzzlers	\$20,000 each
Pipelines	\$10,500 per mile
Fence	\$ 4,000 per mile
Prescribed Burn	\$ 3.00 to \$ 4.00 per acre
PJ Chaining	\$25.00 to \$35.00 per acre
Sagebrush Spraying	\$12.00 per acre
Clear Cuts (Cost absorbed by sale of woodland products)	

### Cultural and Paleontological Resources

Cultural and paleontological resources would continue to be inventoried and evaluated as part of project level planning and non-Bureau initiated actions. Such evaluation would consider the significance of the proposed projects and the sensitivity of resources in the affected area. Mitigation would be attached to project approvals as appropriate to assure compatibility of projects with management objectives for cultural and paleontological resources. For example, if a cultural site is located during construction operations, the operator would be required to cease work in that area and notify the appropriate agency official. Upon determination of significance, and if necessary, salvage/avoidance would be deemed appropriate through consultation between the State Historic Preservation Office (SHPO) and the BLM. The operator could continue work near the affected area. If the site is determined to be non-significant, the operator could continue without any mitigation to the site.



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The objective of the BLM cultural resource program is to manage cultural resources in a stewardship role for public benefit. The Department of the Interior has issued instructions and regulations concerning management of cultural resources. The purposes of the system are to analyze the specific values of cultural resources, to incorporate cultural resources into the planning system, and to identify cultural resource information needs when existing documentation is inadequate to support land use decision making. The Bureau would evaluate sites, areas, and structures on a case-by-case basis as to their eligibility for inclusion into the National Register of Historic Sites.

### Visual Resources

Visual resources would continue to be evaluated as a part of activity and project planning. Such evaluation would consider the significance of the proposed project and the visual sensitivity of the affected area. Stipulations would be attached as appropriate to attain compatibility of projects with management objectives for visual resources.

### GENERAL SUPPORT NEEDS

The approval of the RMP is only the first step in the planning process. The RMP does not represent the final implementation plan for decisions, although site specific actions are identified in an RMP. The activity and project planning phase generally provides the guidance on implementing decisions, actions, cost phasing, scheduling, maintenance, and monitoring, involving areas where extensive capital expenditures are required. Program specific activity plans (i.e., Allotment Management Plans, Habitat Management Plans, Watershed Management Plans) would be prepared following the final decisions made for the RMP. When several program priorities require activity plans in a common geographic area, a coordinated activity plan would be prepared. The final step is plan implementation, including appropriate mitigation. Maintenance of any improvements would be continued as directed in the appropriate plans.

### ACTIONS WHICH WOULD OCCUR REGARDLESS OF THE ALTERNATIVE SELECTED

Most of the management concerns discussed in Chapter 1 involves administrative decisions which will be the same, regardless of the alternative that is selected for this RMP. These concerns include: leasing of public lands for support facilities; administration of NOSR II; retention or revocation of oil shale; reclamation and power site withdrawals; and leasing of geothermal steam. The impacts that would result to the envi-

ronment would not be significant based upon current information; however, additional environmental documentation would be prepared when specific proposals are developed for these concerns. No additional discussion of these concerns appears in this text.

Two management concerns, management of the Boulevard Ridge Watershed Study Area and the Book Cliffs Mountain Browse Natural Area, were included in the alternative analysis.

### SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2-3 presents the environmental consequences of the actions for each alternative. The table is not complete and merely highlights the impacts discussed in more detail in Chapter 4.

### RATIONALE FOR PROPOSED PLAN

The Balanced Use Alternative has been identified as the preferred alternative because it optimizes the use of forage, energy, and other natural resources while protecting critical resources such as wildlife habitat, cultural resources, endangered and threatened species, etc.

This alternative allows ranchers to continue their operations at a level that they have been accustomed to in recent years, thus avoiding severe economic hardships for most permittees. The grazing level in this alternative will protect the range resource from deterioration through overgrazing and will allow range condition improvement in some allotments. The proposed grazing levels are only a starting point; the monitoring program will determine the ultimate grazing levels.

The proposed allocation of forage will satisfy the current demand by wildlife populations and allow for increased wildlife numbers in areas where the potential for increases exists.

The use of fire management under this alternative allows protection of property and critical resources while providing for the use of fire as a beneficial tool within selected areas. Proper management will provide more desirable habitat and forage for wildlife and livestock.

This alternative will impose the least restriction possible upon off-road vehicles while protecting critical resource values such as wildlife, wild horses, endangered and threatened species, **cultural and recreational sites, water quality, soils, and vegetation.**

This alternative will provide an area where wild horses can be managed to maintain a viable herd in a location where they will be least susceptible to disturbing influences such as energy development and human activity.



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The desires of recreationists for primitive facilities in support of hunting will be satisfied under this alternative. The need for developed campgrounds is unlikely, due to the lack of recreational attractions which tend to concentrate people and the seasonal use that is limited to a few weeks in the fall.

The right-of-way corridors identified under this alternative provide a means to transport products through the BCRA **while minimizing impacts** to the critical resources. This network will satisfy the needs of both public utilities and private industry.

This alternative will allow BLM to dispose of isolated parcels where management is unfeasible or impractical, while acquiring properties that can benefit BLM management.



TABLE 2-3  
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

RESOURCE	CURRENT MANAGEMENT	RESOURCE PROTECTION	COMMODITY PRODUCTION	BALANCED USE
MINERALS				
Oil & Gas	Development of oil and gas in the Winter Ridge Wilderness Study Area (WSA) would be delayed until Congress <u>determines area status.</u>	No WSA conflict.	No WSA conflict.	No WSA conflict.
Oil Shale	No oil shale conflicts.	Oil shale mining could damage or destroy oil and gas developments.	Oil shale mining could damage or destroy oil and gas developments.	Oil shale mining could damage or destroy oil and gas developments.
	Additional oil shale development would be delayed.	Eighteen thousand-acre priority management area could limit flexibility in locating two tracts.	No effects to oil shale development.	No effects to oil shale development.
		In situ development would be delayed.		
Tar Sand	Development of tar sand in the Winter Ridge WSA would be delayed until Congress <u>determines area status.</u>	No WSA conflict.	No WSA conflict.	No WSA conflict.
Gilsonite	No effects.	Some veins lost to oil shale development.	Some veins lost to oil shale development.	Some veins lost to oil shale development.



RESOURCE	CURRENT MANAGEMENT	RESOURCE PROTECTION	COMMODITY PRODUCTION	BALANCED USE
Sand and Gravel	No effects.	No effects.	No effects.	No effects.
Building Stone	No effects.	No effects.	Stone on 1,000 acres could be lost to in situ oil shale development.	Stone on 1,000 acres could be lost to in situ oil shale development.
TRANSPORTATION UTILITY CORRIDORS	Possible resource conflicts on 61,500 acres within proposed corridors.	Possible resource conflicts on 46,000 acres within proposed corridors.	Possible resource conflicts on 174,000 acres within proposed corridors.	Possible resource conflicts on 93,000 acres within proposed corridors.
FORAGE	Ecological condition would improve on 490,500 acres in 12 allotments, remain unchanged on 588,400 acres in 35 allotments, and decline on 36,400 acres in 7 allotments.	Ecological condition would improve on 946,600 acres in 49 allotments and remain unchanged on 36,400 acres in 5 allotments.	Ecological condition would improve on 642,300 acres in 30 allotments and remain unchanged on 472,900 acres in 24 allotments.	Ecological condition would improve on 835,100 acres in 37 allotments and remain unchanged on 280,300 acres in 17 allotments.
	Livestock would be authorized 102,915 AUMs (no change AUMs from active preference), wildlife would be authorized 43,638 AUMs (no change from allocated use), and wild horses would not be authorized any forage.	Livestock would be authorized 53,459 (48 percent) below active preference, wildlife would be authorized 11,959 AUMs (27 percent) above allocated use, and wild horses would be authorized 2,940 AUMs above the current allocated level of zero.	Livestock would be authorized 109,485 AUMs (7 percent) above active preference, wildlife would be authorized 26,351 fewer AUMs (a 60 percent decrease below allocated use, and wild horses would be authorized 710 AUMs above the current allocated level of zero.	Livestock would be authorized 81,316 AUMs (21 percent) below active preference, wildlife would be authorized 3,958 AUMs (9 percent) above allocated use, and wild horses would be authorized 2,340 AUMs above the current allocated level of zero.



RESOURCE	CURRENT MANAGEMENT	RESOURCE PROTECTION	COMMODITY PRODUCTION	BALANCED USE
FORAGE (CONT.)	Approximately 576 AUMs would be lost to mineral development and no AUMs would be gained from land treatments.	Approximately 1,181 AUMs would be lost to mineral development and 1,708 AUMs would be gained from land treatments.	Approximately 3,856 AUMs would be lost to mineral development and 2,700 AUMs would be gained from land treatments.	Approximately 1,858 AUMs would be lost to mineral development and 2,034 AUMs would be gained from land treatments.
WILDLIFE WILD HORSES	No significant effects on wildlife or wild horse forage.	Additional forage available for wildlife and wild horses would allow the following increases: antelope: 503 mule deer: 12,100 elk: 1,800 wild horses: 39	Reduced forage for wildlife would result in the following decreases: antelope: 309 mule deer: 400 elk: no change wild horses: 146	Additional forage for wildlife would allow the following increases: antelope: 189 to 289 mule deer: 7,800 to 9,800 elk: 1,300 to 1,400 Reduced forage for wild horses would result in the <u>removal</u> of 6 horses.
	No significant changes to habitat.	Significant habitat improvements due to livestock decreases.	Significant habitat losses due to mineral development.	Overall habitat improvement in spite of losses to mineral development.
	No effects on endangered fish species.	Water depletions from the White River could affect two endangered fish species.	Water depletions from the White River would affect two endangered fish species.	Water depletions from the White River could affect two endangered fish species.



RESOURCE	CURRENT MANAGEMENT	RESOURCE PROTECTION	COMMODITY PRODUCTION	BALANCED USE
WOODLANDS	Approximately 220 acres of woodlands could be eliminated annually, due to overharvest.	One thousand-seven hundred acres of woodlands lost to mineral development, rights-of-way, and fire.	Twenty thousand-three hundred and eighty acres of woodlands lost to mineral development, rights-of-way and fire.	Five thousand-one hundred and fifty acres of woodlands lost to mineral development, rights-of-way and fire.
		Twelve thousand-eight hundred acres unavailable for harvest to protect other resources.	Twenty acres unavailable for harvest to protect other resources.	Four thousand-seven hundred and fifty acres unavailable for harvest to protect other resources.
RECREATION	Population increases would result in increased demand for big game hunting by 400 visitor days.	Population increases and increased big game populations would result in increased demand for big game hunting by 4,060 visitor days.	Population increases would result in increased demand for big game hunting by 1,560 visitor days.	Population increases and increased big game populations would result in increased demand for big game hunting by 3,350 visitor days.
	No significant increase in the demand for other recreational activities.	Demand for other recreational activities would increase by 2,700 visitor days.	Demand for other recreational activities would increase by 5,900 visitor days.	Demand for other recreational activities would increase by 4,700 visitor days.
	Musket Shot Springs Overlook <u>retained.</u>	Musket Shot Springs Overlook <u>retained.</u>	Musket Shot Springs Overlook eliminated.	Musket Shot Springs Overlook <u>retained.</u>



RESOURCE	CURRENT MANAGEMENT	RESOURCE PROTECTION	COMMODITY PRODUCTION	BALANCED USE
RECREATION (CONT.)	No significant effect to visual resources.	Construction in designated corridors could adversely affect visual resources on 4,640 acres.	Construction in designated corridors could adversely affect visual resources on 13,400 acres.	Construction in designated corridors could adversely affect visual resources on 6,400 acres.
	Undesignated ORV use could be inconsistent with Ute tribal plans for Hill Creek Extension.	ORV designations consistent with Ute tribal plans for Hill Creek Extension.	ORV designations inconsistent with Ute tribal plans for Hill Creek Extension.	ORV designations consistent with Ute tribal plans for Hill Creek Extension.
	No effects to ORV use.	Five hundred and seventy-five ORV user days would be lost to closures and restrictions.	Two hundred ORV user days would be lost to closures and restrictions.	Five hundred ORV user days would be lost to closures and restrictions.
FIRE MANAGEMENT	No effects to canoeing.	No effects to canoeing.	Water depletions from the White River would result in marginal canoeing opportunities.	Water depletions from the White River could result in marginal canoeing opportunities.
	Livestock forage and wildlife habitat would improve on 10,000 acres.	Wildlife habitat would improve on 15,000 acres.	Livestock forage would increase and wildlife habitat would diminish on 13,000 to 28,500 acres.	Livestock and wildlife forage would increase and wildlife habitat would improve on 17,000 to 27,900 acres.



RESOURCE	CURRENT MANAGEMENT	RESOURCE PROTECTION	COMMODITY PRODUCTION	BALANCED USE
WATERSHED	No effect on water quality.	Diverting an additional 28,000 acre-feet from the White River for oil shale development would increase TDS concentrations at Imperial Dam by 1 mg/l.	Diverting an additional 56,000 acre-feet from the White River for oil shale development would increase TDS concentrations at Imperial Dam by 2 mg/l.	Diverting an additional 28,000 to 56,000 acre-feet from the White River for oil shale development would increase TDS concentrations at Imperial Dam by 1 to 2 mg/l.
	Watershed treatments would reduce soil loss by 64,000 tons.	Watershed treatments would reduce soil loss by 711,000 tons.	Watershed treatments would reduce soil loss by 41,000 tons.	Watershed treatments would reduce soil loss by 505,000 tons.
	No significant effect on soil loss.	An additional 10,700 to 20,600 tons of soil would be lost to mineral development.	An additional 47,300 to 83,200 tons of soil would be lost to mineral development.	An additional 17,700 to 36,500 tons of soil would be lost to mineral development.
	No significant effect on floodplains.	Unquantifiable improvement to floodplains by limiting or restricting livestock and ORV use and mineral development.	No significant effect on floodplains.	Unquantifiable improvement to floodplains by limiting or restricting livestock and ORV use and mineral development.



RESOURCE	CURRENT MANAGEMENT	RESOURCE PROTECTION	COMMODITY PRODUCTION	BALANCED USE
LAND ADMINISTRATION	No effect on land administration.	Acquisition of up to <u>8,700</u> acres of riparian and wildlife habitat would enhance the wildlife program.	Acquisition of up to 10,000 acres of tar sand and oil shale areas would enhance the minerals program.	Acquisition of up to <u>18,700</u> acres of land would enhance <u>both renewable and nonrenewable resource programs.</u>
AIR QUALITY	No significant effect on air quality.	NAAQS and Class II standards for TSP could be exceeded near mines and haul roads.	NAAQS and Class II standards for TSP would be exceeded. Visible discoloration would occur to the Uintah and Ouray Indian Reservation. Discoloration could occur to the Dinosaurs and Colorado National Monuments.	NAAQS and Class II standards for TSP would be exceeded. Visible discoloration could occur to Dinosaur National Monument and the Uintah and Ouray Indian Reservation.
CULTURAL RESOURCES/PALEONTOLOGY	No significant effects.	No significant effects.	No significant effects.	No significant effects.
SOCIO-ECONOMICS	No significant changes to the economy, population, or community infrastructure.	Mineral development would increase regional employment and income an unknown amount.	Mineral development would increase regional employment and income by an unknown amount.	Mineral development would increase regional employment and income by an unknown amount.



RESOURCE	CURRENT MANAGEMENT	RESOURCE PROTECTION	COMMODITY PRODUCTION	BALANCED USE
SOCIO-ECONOMICS (CONT.)		Decrease in authorized AUMs of 49,456 could decrease operator wealth by <u>\$2,967,360.</u>	An increase in authorized AUMs of 7,406 could increase operator wealth by <u>\$444,360.</u>	A decrease in authorized AUMs of 21,599 could decrease operator wealth by <u>\$1,295,940.</u>
		Increases in big game hunting (4,060 <u>visitor days</u> ) and other recreational activities (2,700 <u>visitor days</u> ) would increase local revenues by <u>\$304,200.</u>	Increases in big game hunting (1,560 <u>visitor days</u> ) and other recreational activities (5,900 <u>visitor days</u> ) would increase local revenues by <u>\$335,700.</u>	Increases in big game hunting (3,350 <u>visitor days</u> ) and other recreational activities (4,200 <u>visitor days</u> ) would increase revenues by <u>\$339,750.</u>
		Population increases would increase demands on community infrastructure.	Population increases would increase demands on community infrastructure.	Population increases would increase demands on community infrastructure.
		No significant effects.	A 16 percent increase in traffic volume on the four major highways would reduce the level of service and increase the number of accidents.	A 13 percent increase in traffic volume on the four major highways would reduce the level of service and increase the number of accidents.
TRANSPORTATION	No significant effects.	No significant effects.		







# Chapter 3

## Affected Environment









# CHAPTER 3

## AFFECTED ENVIRONMENT

### INTRODUCTION

The affected environment is that portion of the existing environment which would be affected by implementation of any of the alternatives. This chapter provides information about those portions of the environment which would be significantly affected by the alternatives, as determined by the impact analyses presented in Chapter 4.

### MINERALS

#### Oil and Gas

Oil and gas exploration, development, and production are occurring in the BCRA on a large scale. Uintah County ranked second in the State for cumulative oil and gas production and first for total footage drilled in 1980 (Brown 1981).

General information on the various oil and gas fields including type and amount of production, location, and number of producing wells within the BCRA are provided on Table 3-1 (Brown 1981). All oil and gas leases are currently issued under the existing oil and gas category system presented in Chapter 2 (Current Management Alternative).

A favorability and certainty system pertaining to oil and gas is shown in Figure 3-1. The first rating is an estimate of the favorability (f) of the geologic environment to contain oil and gas. The f1 rating is assigned because it is unfavorable for oil and gas accumulations. Ratings of f2, f3, or f4 would correspond to increasing levels of geologic favorability. (For instance, an area assigned an f4 rating would be in an environment that is favorable for oil and gas accumulations exceeding 50 million barrels of oil, or if gas, 300 billion cubic feet, as described in Appendix 4 (Specialized Mineral Terminology). The second rating is the degree of certainty (c) that the resource does or does not exist. If little is known about the existence of the resource in the area, certainty ratings of c1 or c2 would be assigned for that particular resource, regardless of the assigned favorability rating. A c2 rating for oil and gas indicates that no direct data are available to support or refute the existence of oil and gas. Higher degrees of certainty (c3 and c4) indicate that direct data are available either supporting or refuting the existence of the resource in the area.

Currently, 150,000 acres are classified as f3. This is the highest rating found within the BCRA using the favorability system. Approximately 900,000 acres are classified as f2 with the remaining 30,000 acres on Blue Mountain classified as f1.

Known geologic structures (KGS) representing producing or producible oil and gas areas are displayed in

Figure 3-2. Currently, approximately 450,000 acres within the BCRA are delineated as KGSs. As new fields are discovered and existing areas are reanalyzed, the size of the KGS areas are expected to increase.

A call for general expression of interest, which included a request for mineral potential ratings, was released September 2, 1982. The request was forwarded to the Rocky Mountain Oil and Gas Association (RMOGA) which uses the RMOGA Energy and Mineral Evaluation System. Eight companies responded including: Pennzoil, Atlantic Richfield, Conoco, Celeron, Chevron, Champlin, Marathon, and Wexpro. The entire resource area was rated good to excellent for potential oil and gas development, with the exception of the Blue Mountain area, which was rated poor.

#### Oil Shale

Oil shale does not contain oil, but an organic-rich matter, kerogen, which may be converted to oil through processing. There are seven oil shale units in the Uinta Basin located primarily in the Parachute Creek member of the Green River formation. The Mahogany Zone is one of these units. The optimum oil shale section in the Mahogany Zone, called the "Rich Zone", is the main target of economic interest and appears to be the most promising section for oil shale development. Higher strength beds of low grade oil shale at the top and bottom are expected to yield satisfactory roof and floor conditions. This unit, as described in barrels per acre, is shown in Figure 3-3 (Trudell, et al. 1983). The "rich zone" in the BCRA ranges from 30 to 55 feet thick and yields from 22 to 34 gallons of oil per ton (Trudell 1983). The 2,000-foot overburden line shown in Figure 3-3 is the maximum depth at which underground mining would generally occur.

Two federal oil shale tracts are currently under lease within the BCRA. These tracts, U-a and U-b, are leased in accordance with the Prototype Oil Shale Leasing Program (BLM 1973) and are commonly known as the White River Shale Project (Figure 1-4).

The presence of confirmed deposits of oil shale has been administratively designated as Known Oil Shale Lease Areas (KOSLAs). KOSLAs have the following characteristics:

- Minimum 25 gallons per ton;
- Minimum 25-foot thick Mahogany bed;
- Maximum 3,000 feet of overburden;
- A direct data point within 3 miles.

The location of KOSLA's in the BCRA are shown in Figure 3-4.

In response to the BLM's call for a general expression of interest, the oil shale industry identified only areas applicable to in situ development. The areas



Table 3-1

## General Oil and Gas Production - Book Cliffs Resource Area

Field	Location SLBM	Cumulative Production thru 1980		Wells (thru 1981)		Remarks
		Oil (Barrels)	Gas (MCF)	Producing	Producible	
Brennan Bottom	T7S, R20 & 21E	830,000	803,000	3	4	
Buck Canyon	T1S, R21E	--	486,000			Shut In
Coyote Basin	T8S, R24 & 25E	887,000	310,000	8	9	
Fence Canyon	T15S, R22 & 23E	1,200	4,798,000	3	3	Partially in Grand County
Flatrock	T14S, R20E	28,000	2,000	2	Unknown	
Horsepoint	T16S, R23E	--	1,792,329	3	Unknown	
Horseshoe Bend	T6 & 7S, R21 & 22E	163,000	13,313,000	7	13	
Natural Buttes	T8, 9, & 10S, R20, 21, 22 & 23E	285,000	74,028,000	109 230	169 303	1979 1981
Main Canyon		423,000	125,000	1		
Oil Springs	T11 & 12S, R24E	19,000	1,988,000	1	1	1979
Red Wash*	T7 & 8S, R21, 22, 23 & 24E	115,087,000	314,139,000	267	Unknown	
Rockhouse	T11S, R22, 23, & 24E	9,000	7,242,000	6	10	
River Junction	T9S, R20E	156,000	192,000	2	2	1979
Seep Ridge	T13S, R22E	3,000	2,847,000	1	7	
Southam	T10S, R23E	13,000	953,000	5	7	
Undesignated Fields		56,000	2,641,000	49	66	
Total		118,000,000	425,660,000			

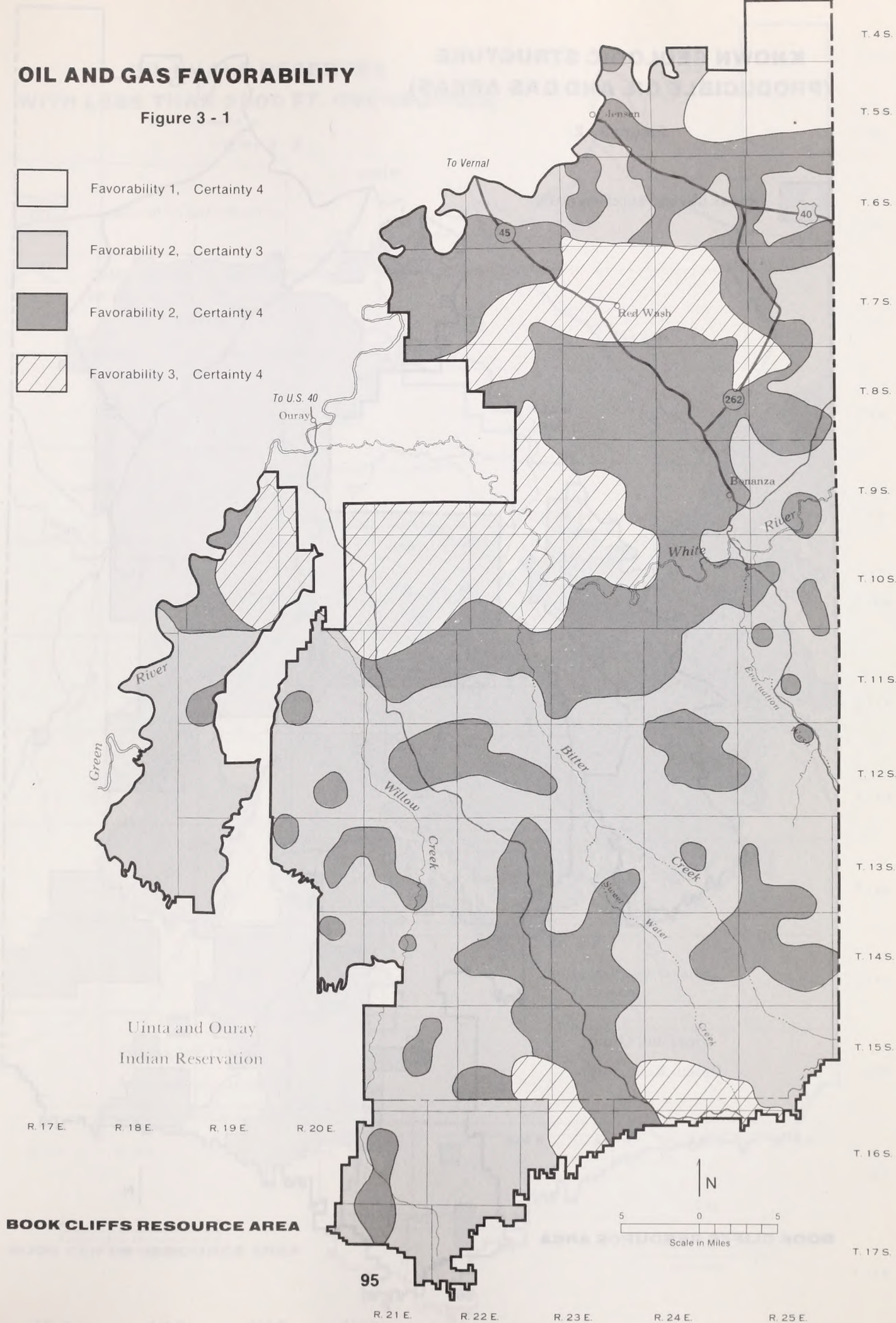
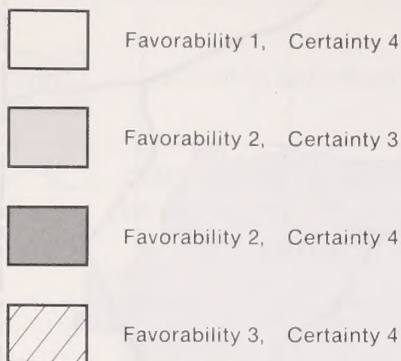
MCF = 1,000 cubic feet; SLBM = Salt Lake Base and Meridian

\*Includes Gypsum Hills, Powder Springs, Walker Hollow, Wonsits Valley, White River, Red Wash Unit, Red Wash-Gas and Red Wash-Mesaverde.



# OIL AND GAS FAVORABILITY

Figure 3 - 1



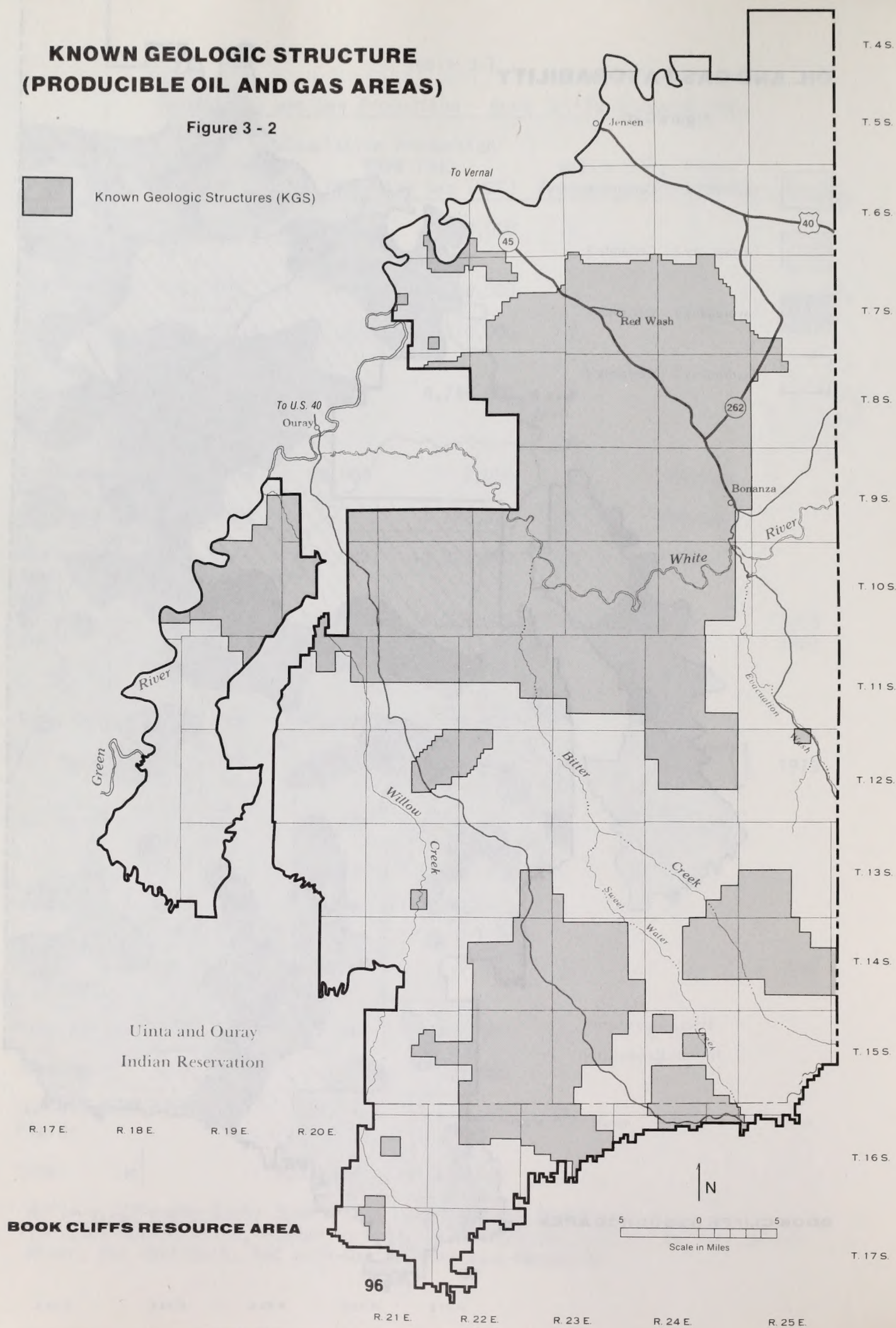


# **KNOWN GEOLOGIC STRUCTURE (PRODUCIBLE OIL AND GAS AREAS)**

**Figure 3 - 2**



Known Geologic Structures (KGS)





# **OIL SHALE RESERVES WITH LESS THAN 2000 FT. OVERBURDEN**

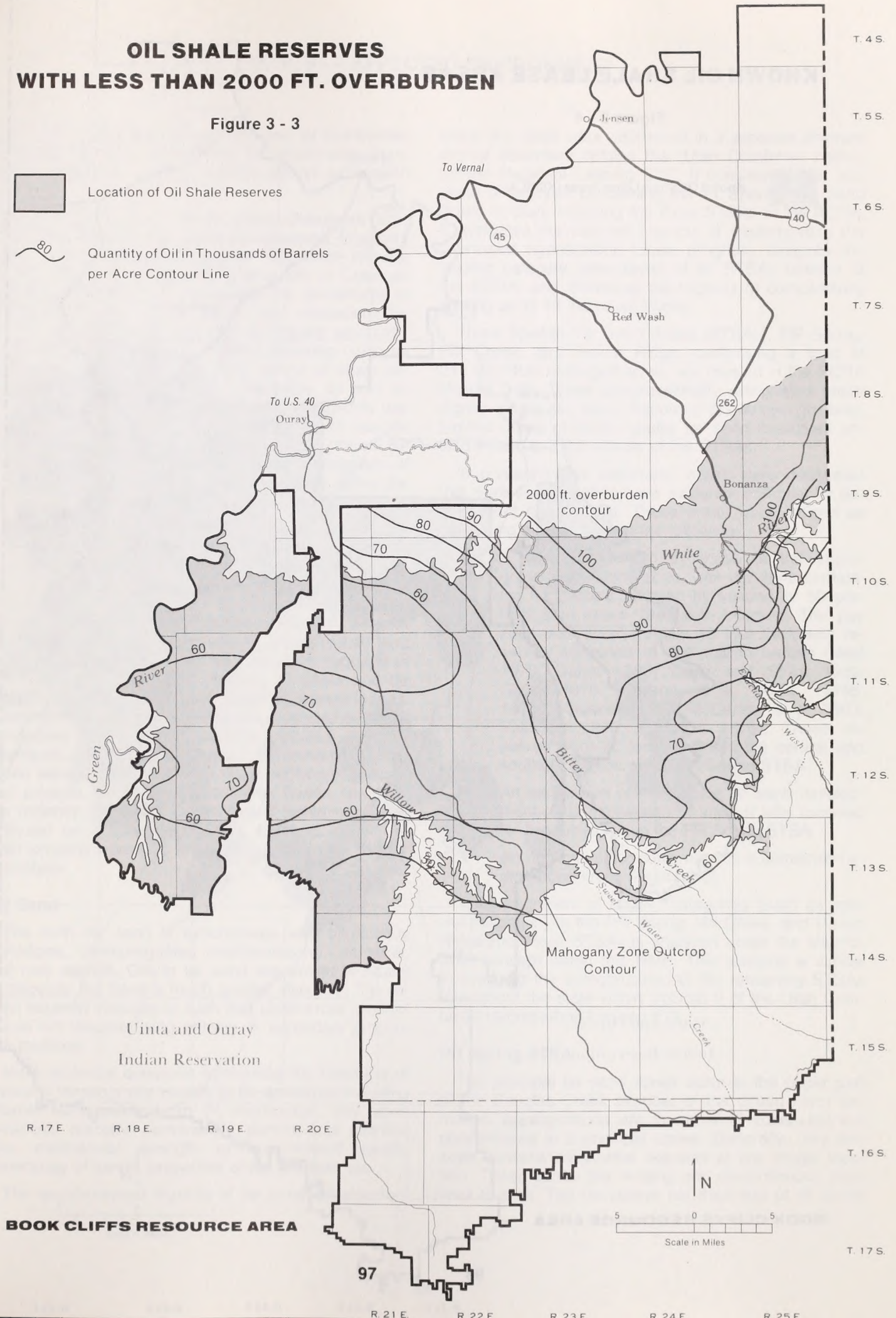
**Figure 3 - 3**



Location of Oil Shale Reserves



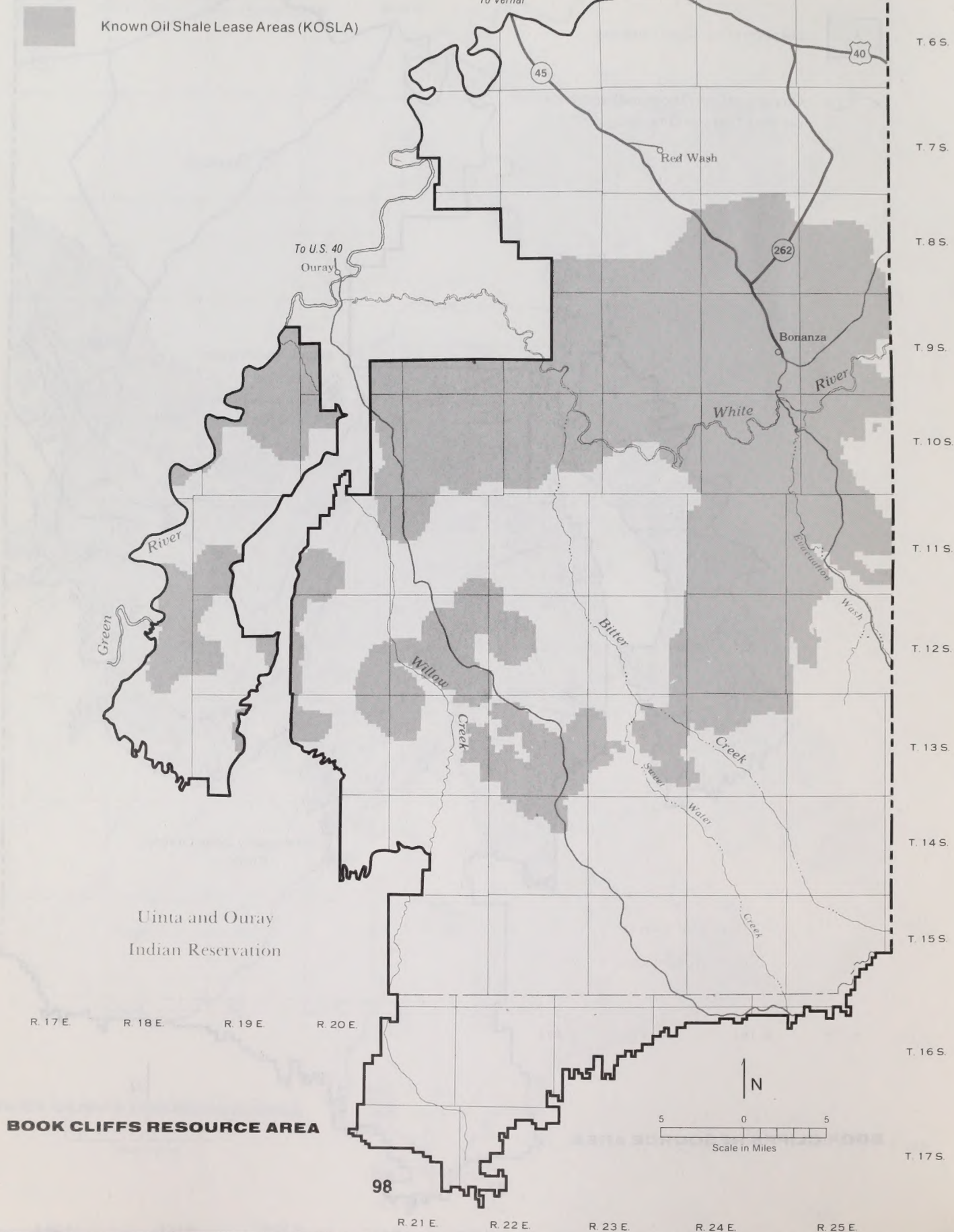
Quantity of Oil in Thousands of Barrels  
per Acre Contour Line





# KNOWN OIL SHALE LEASE AREAS

Figure 3 - 4





## CHAP. 3 — AFFECTED ENVIRONMENT

identified have between 0 and 200 feet of overburden and are indicated in Figure 3-5. No areas were identified in response to a site specific call for expression of interest.

A recent Draft Environmental Impact Statement (EIS) entitled the "Federal Oil Shale Management Program" (BLM 1983a) analyzed the general regionwide impacts of a proposed oil shale leasing program in Colorado and Utah. The program established the procedures to determine the location, schedule, and stipulations for new oil shale leases. This proposed program would rely on RMPs *and associated activity planning* (such as Book Cliffs RMP) to identify areas where oil shale development would be generally acceptable, as well as identify specific tracts within these oil shale priority use (or management) areas. The identification of specific tracts was to rely heavily on expressions of interest received from industry. Since no specific expressions of interest were received for oil shale leasing within the BCRA, priority use areas have been identified in this document, but not specific tracts.

The leasing of Federal oil shale that is considered in this RMP represents only a portion of the oil shale program within the Uintah Basin. A second environmental document entitled the "Uinta Basin Synfuels Development", analyzed the applications by seven different companies for various rights-of-way across public land (BLM 1982). These rights-of-way would be required in order for the companies to develop oil shale and tar sand reserves they hold under *State or private leases*. A total of nine separate projects are proposed by these companies. Five of the projects including Enercor (Rainbow), Magic Circle, Paraho, Syntana-Utah, and Tosco were analyzed in detail. Four additional 'conceptual' projects including Enercor-Mono Power, Geokinetix (Agency Draw and Lofreco), and Sohio were also analyzed on a conceptual basis. A group of 'interrelated' projects were also briefly discussed in the regional analysis.

### Tar Sand

The term tar sand is synonymous with bituminous sandstone, oil-impregnated rock/sandstone, oil sand, and rock asphalt. Oils in tar sand are similar to heavy oil deposits but have a much greater viscosity. The tar sand bitumen viscosity is such that commercial production is not feasible using primary or secondary production methods.

Many technical questions concerning the feasibility of resource development remain to be answered including bitumen saturation, depth of overburden, pay zone thickness, porosity, permeability, particle size distribution, mechanical strength of consolidated sands, mineralogy of sands, properties of the bitumen, etc.

The environmental impacts of tar sand development

within the State were addressed in a separate environmental document entitled the "Utah Combined Hydrocarbon Regional Leasing EIS". It consists of four volumes of analysis concerning the 11 Special Tar Sand Areas in Utah, including the three STSAs in the BCRA. It evaluates the regional impacts of implementing the Combined Hydrocarbon Lease program, analyzes the leasing category alternatives of all STSAs outside of the BCRA, and discusses the impacts of competitively leasing up to 18 individual tracts.

Three Special Tar Sand Areas (STSAs), PR Spring, Hill Creek, and Raven Ridge, comprising a total of 217,000 BLM managed acres, are present in the BCRA (Figure 3-6). These congressionally designated areas signify where tar sand resources are known to exist. Limited areas of lesser quality tar sand resources are also known to exist outside of the STSAs.

In preparing this document, areas were delineated that were considered to have moderate potential for development (Figure 3-7). These areas were defined as containing one or more of the following:

- A 10-foot minimum thickness of the impregnated sandstone zone, with the zone containing 13 percent bitumen by volume or 50 percent pore space filled with bitumen. The pay zone was approximately 15 feet thick with reserves estimated at 700 million barrels (Byrd 1970; Dahm 1980; Dana and Sinks 1982; Guynn 1970; Johnson, et al. 1975a, 1975b, 1975c; Kuuskraa 1978; McCarthy, et al. 1983; Peterson 1974; Peterson 1975). These reserves were all located within the central and southern portion of the PR Spring STSA.
- An expression of interest for tar sand development. One expression of interest was received for two areas within the PR Spring STSA.
- An application for conversion to a combined hydrocarbon lease (Figure 2-2).

The assignment of leasing categories (such as special mitigation) to the PR Spring, Hill Creek, and Raven Ridge-Rim Rock STSAs is analyzed under the alternatives concept within this RMP. This analysis is similar in scope to the categorization of the remaining STSAs throughout the state within Volume II of the Utah Combined Hydrocarbon Leasing EIS.



### PR Spring STSA

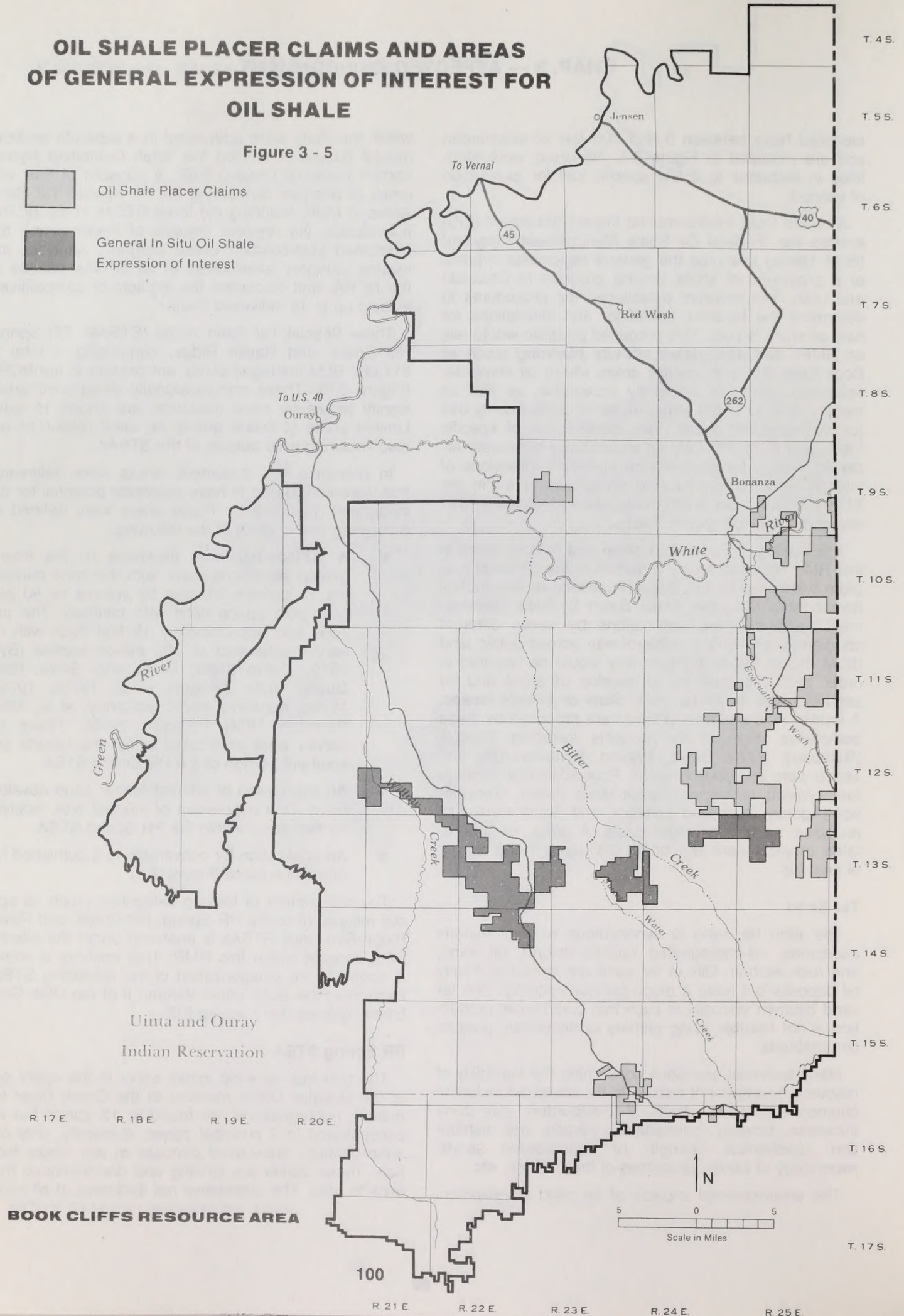
The principal tar sand zones occur in the upper part of the Douglas Creek member of the Green River formation. Impregnations are found in 13 zones but are concentrated in 5 principal zones. Generally, only one zone contains substantial deposits at any single location. These zones are lensing and discontinuous from area to area. The cumulative net thickness of all zones



# OIL SHALE PLACER CLAIMS AND AREAS OF GENERAL EXPRESSION OF INTEREST FOR OIL SHALE

Figure 3 - 5

-  Oil Shale Placer Claims
-  General In Situ Oil Shale Expression of Interest



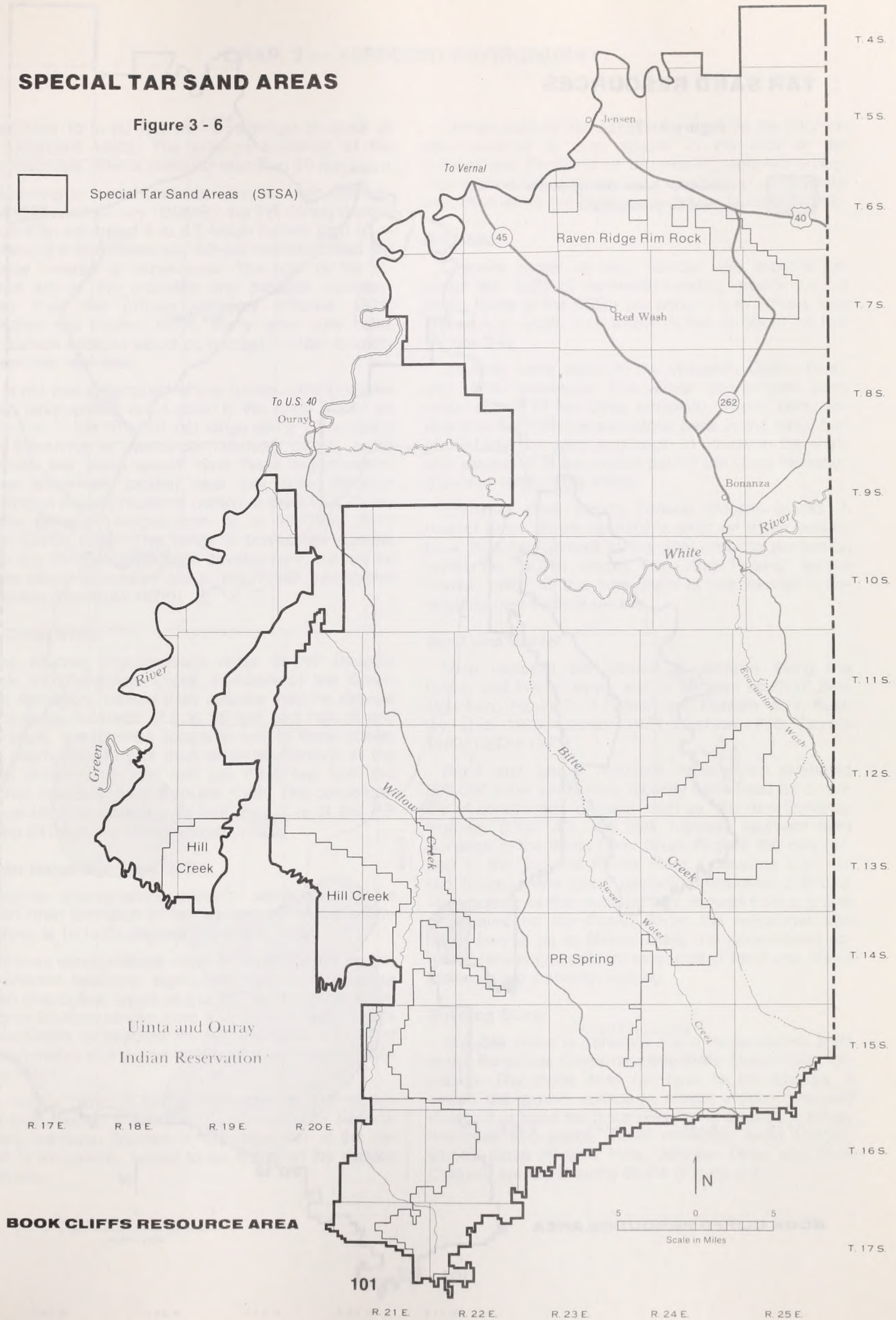


# SPECIAL TAR SAND AREAS

Figure 3 - 6




Special Tar Sand Areas (STSA)

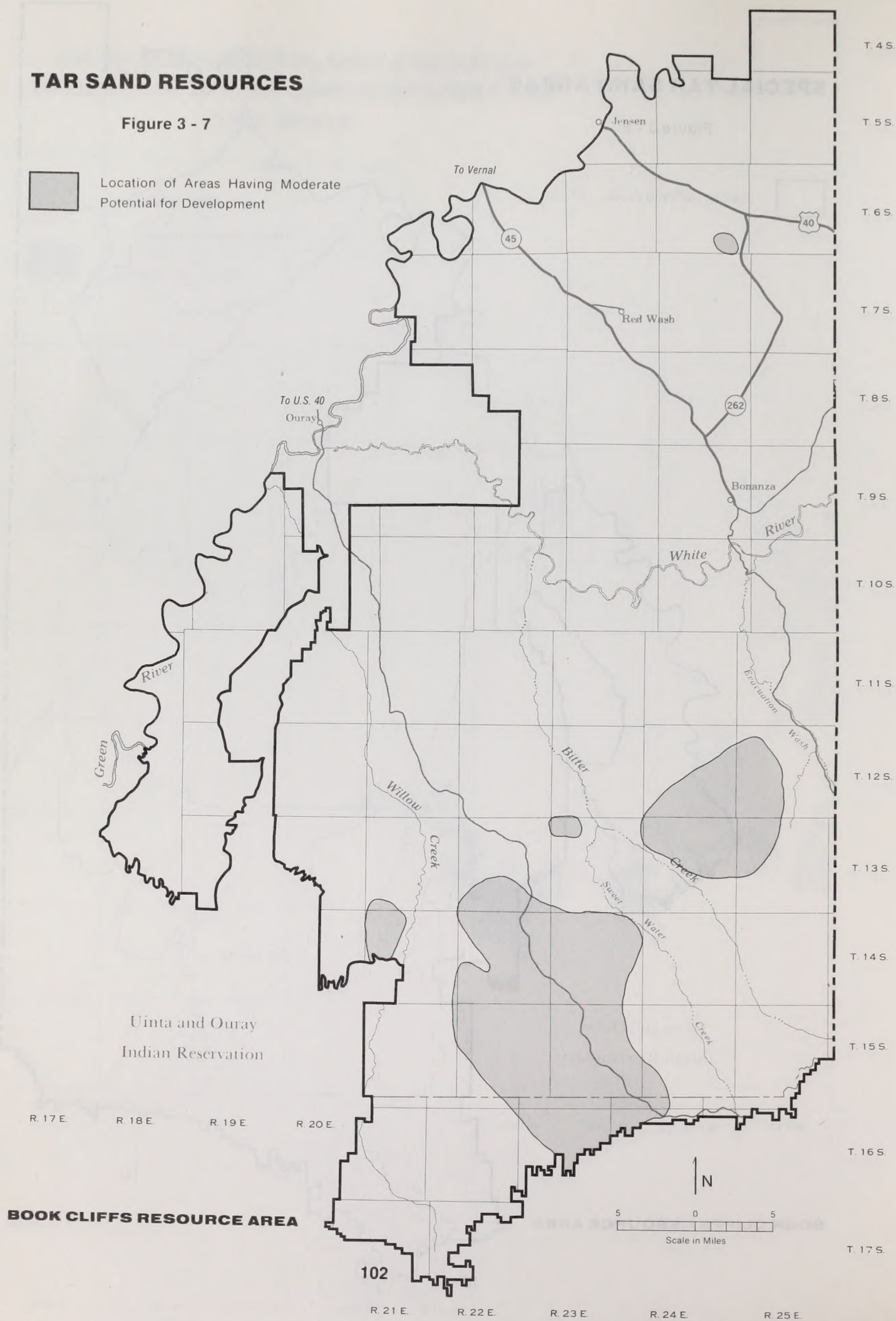




# TAR SAND RESOURCES

Figure 3 - 7

 Location of Areas Having Moderate Potential for Development





varies from 10 to 80 feet with an average of about 35 feet (Hubbard 1983). The average thickness of the most favorable zone is generally less than 20 feet.

According to recent statistics from the Utah Geological and Mineral Survey (UGMS), the PR Spring deposit contains an estimated 4 to 4.5 billion barrels (bbl) of oil in place, 2.5 bbl measured, 1.2 bbl indicated, and the balance inferred or conjectured. The bulk of the reserves are in the probable and possible category, rather than the proven category (Ritzma 1979; Campbell and Ritzma 1979). Many more core holes and surface sections would be needed in order to verify the reserve estimates.

It is not well understood where surface mining versus in situ development could occur in this area. Based on pay zones in the 10 to 20 foot range and a 1/1 stripping ratio (thickness of overburden/thickness of pay zone) relatively few areas would meet these requirements. These areas are located near pay zone outcrops primarily in the south-central portion of the STSA. Overburden generally ranges from 50 to 300 feet (Byrd 1970; Dahm 1980). This range is considered suitable for in situ thermal combustion development, but not for in situ steam processes due to insufficient overburden pressures (Kuuskraa 1978).

### Hill Creek STSA

The bitumen impregnations occur in the Douglas Creek and Parachute Creek members of the Green River formation. Limited data indicate that the deposit has a gross thickness of 5 to 35 feet and that, at any one place, the bitumen occurs in one to three zones. The overburden ranges from none at outcrops in the south to more than 500 feet just 1,300 feet from the outcrop, and even thicker to the north. The concentration of bitumen generally is less than it is at the PR Spring STSA to the east (Hubbard 1983).

### Raven Ridge/Rim Rock STSA

Bitumen impregnations occur in sandstones of the Green River formation of Tertiary age. Rocks dip southwesterly at 10 to 33 degrees (Hubbard 1983).

Bitumen impregnations occur in discontinuous layers. At different locations, significant impregnations occur within one to four layers in the STSA. The gross thickness of bitumen ranges from 5 to 95 feet, but no data are available to describe the net thicknesses or other characteristics of the bitumen-impregnated layers (Hubbard 1983).

A narrow band of bitumen-impregnated rock occurring along Raven Ridge could be extracted by surface-mining methods. Bitumen in the remainder of the deposit is too deeply buried to be extracted by surface methods.

Current data do not adequately describe the bitumen concentrations in pore spaces in the rock or the number and thickness of bitumen-impregnated layers. The deposit has only modest probability of commercial extraction within the foreseeable future (Hubbard 1983).

### Gilsonite

Gilsonite occurs as long, narrow, vein deposits between the walls of northwest-trending, nearly vertical joints. Veins in the BCRA are about 0.5 to 7 miles long and vary in width from a few inches to about 18 feet (Figure 3-8).

Gilsonite veins occur in the Wasatch, Green River, and Uinta formations. The widest and longest veins occur mainly in the Uinta formation. These veins are widest in the massive sandstone beds in the basal part of the Uinta formation and begin to narrow in the shale and sandstone in the middle part of the Uinta formation (Cashion 1968; Pruitt 1960).

Currently, there are 12 Federal gilsonite leases. A total of three mining operations exist on these leases. Less than five percent of the total gilsonite production within the BCRA occurs from the Federal leases (Vance 1983). At this time, there is little interest in developing new Federal leases.

### Sand and Gravel

Most deposits are located in terraces along the Green and White Rivers and in terraces south of Blue Mountain, (Figure 2-18 Rowley and Hansen 1979; Rowley, et al. 1979; Cashion 1974; Cashion 1978; Carrara 1980; USDH 1971).

Sand and gravel materials totaling an estimated 900,000 cubic yards have recently been used for a variety of construction projects such as: the new Bonanza highway (Utah 45), the new highway segment from Bonanza to the White River Shale Project, the new railway to the Deseret Power Plant, upgrading U.S. 40, two bridges, and other related construction activities. The majority of this material was derived from a gravel pit located on the Green River; the remainder was taken from a pit in Miners Draw. No construction activities requiring significant quantities of sand and gravel materials are currently ongoing.

### Building Stone

Suitable stone is generally found in sandstone beds of the Parachute Creek member of the Green River formation. The stone does not have to be quarried; it covers the ground surface in almost uniform size and shape. It is used for decorative home projects such as fireplaces and patios. Three collection areas totalling 21,500 acres (Nutters Hole, Johnson Draw and Buck Canyon) are found in the BCRA (Figure 2-4).

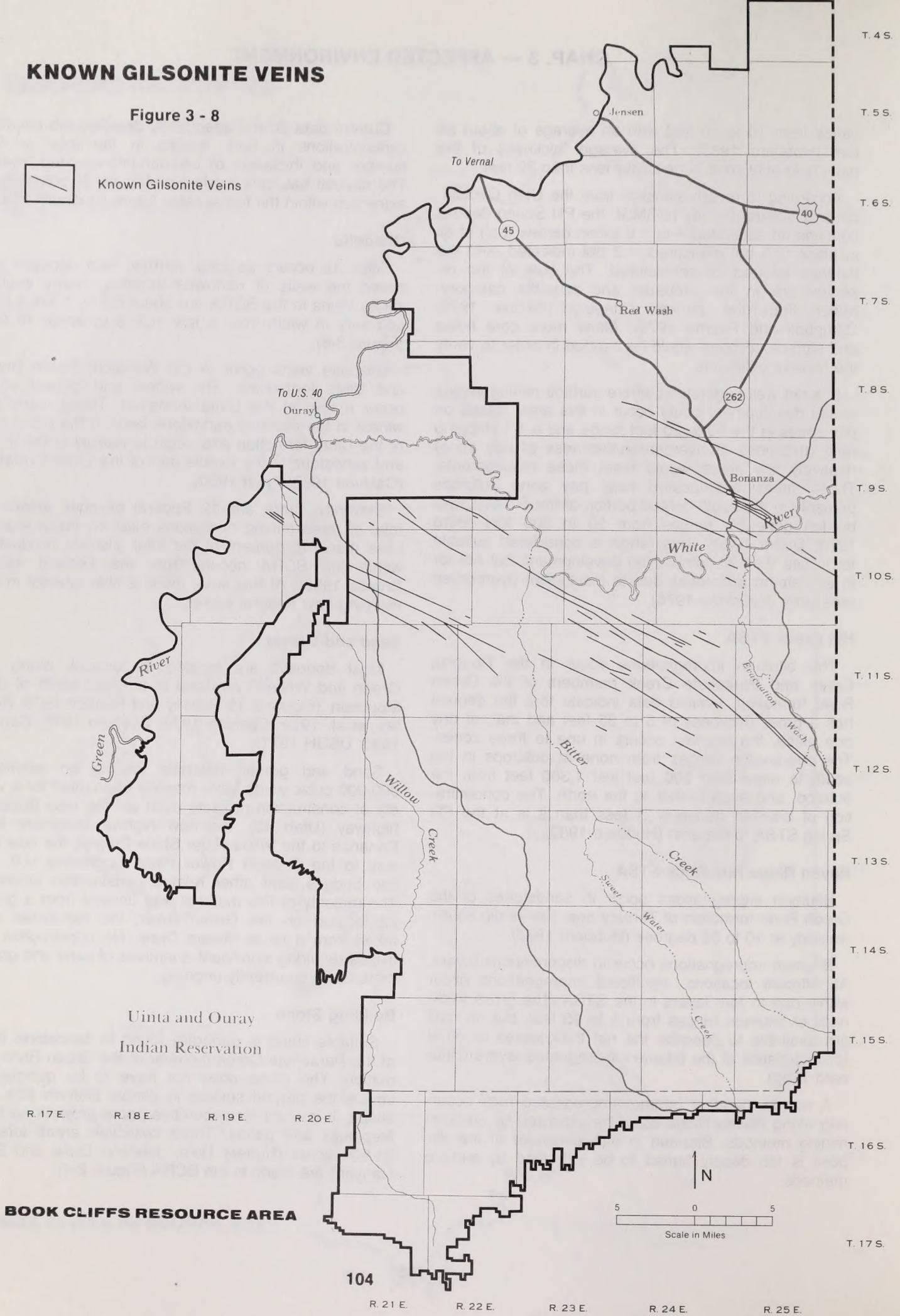


# KNOWN GILSONITE VEINS

Figure 3 - 8



Known Gilsonite Veins





## CHAP. 3 — AFFECTED ENVIRONMENT

Approximately 100 to 200 tons of building stone are sold annually within the BCRA. The purchase of stone is limited to 15 tons per person/company limiting the extent of commercial interest.

### Locatable Minerals

The general mining law of 1872 authorized placer and lode mining claims to be located by a procedure that is largely unchanged to this day (17 Stat. 91). In 1930, it became apparent that mining claims located in lands considered valuable for oil shale posed a potential encumbrance against future oil shale development. Subsequently, lands considered valuable for oil shale were withdrawn from appropriation under the general mining laws. Approximately 75 percent of the BCRA remains under an oil shale withdrawal and is not open to entry.

Oil shale and tar sand were originally included in the claim-patent system and remained available to location until the passage of the Minerals Leasing Act of February 25, 1920, (41 Stat. 437). This law provided that deposits of coal, phosphate, oil, oil shale, tar sand, gas, and sodium could be acquired only through a leasing system and were no longer applicable to the Mining Law of 1872. This law recognized "prior existing" rights under the general mining law of 1872 for claims located prior to 1920. Unpatented oil shale and tar sand claims of record exist within the BCRA (Figure 3-5).

Within the BCRA, there has been no past production of any economic significance for those minerals presently considered locatable (uranium, placer gold, and copper for example). The BCRA is considered to have little or no potential for future economical mineral developments.

Passage of the surface management regulations of January 1, 1981, provides for reclamation of unpatented mining claims (including the pre-1920 oil shale claims) where surface disturbance is considered greater than casual use (43 CFR 3809). All required reclamation plans are subject to review and if they are deemed inadequate are subject to possible rejection.

### RIGHT-OF-WAY CORRIDORS

Several hundred miles of rights-of-way currently exist in the BCRA. These rights-of-way are used for a variety of projects including, but not limited to, oil and gas pipelines, communication lines, powerlines, water pipelines, and roads.

Two major north-south corridors are the Seep Ridge Road on the western part of the BCRA and the Mapco pipeline route near the Utah-Colorado border. Both of these corridors currently accommodate oil and gas pipelines and roads and have the capacity for additional rights-of-way. Another north-south corridor accommo-

dates the Vernal-Bonanza road and a water pipeline. The only major east-west corridor occurs along U.S. Highway 40. These existing corridors would not adequately serve tar sand and oil shale development areas.

The width of existing and planning corridors varies greatly, but averages approximately 0.6 mile.

### FORAGE

For purposes of forage planning and analysis, the BCRA has been divided into four sub areas termed localities. These groupings are based upon resource problems that are common to several allotments and which could be resolved by similar management actions. These localities have been called Blue Mountain, Bonanza-Rainbow, Book Cliffs, and Hill Creek.

#### Blue Mountain Locality.

This locality contains Blue Mountain and is located east of the Green River and north of Highway 40. Elevation ranges from 4,800 feet to 8,300 feet. The bulk of the area consists of a high sage-grass plateau. The adjacent slopes breaking into the Green River are primarily occupied by pinyon and juniper with some mountain browse on the upper north-facing slopes. This locality is 38,000 acres in size. Soils and vegetation have been classified into ecological sites and rated by condition as summarized in Appendix 10 (Ecological Sites and Condition by Locality). Approximately 600 acres are rated in poor ecological condition, 8,000 acres in fair condition, 27,400 acres in good condition, and 2,100 acres in excellent condition. Maps and detailed ecological condition data are found in the Vernal District Office inventory files.

The locality contains 6 allotments. The season of use is predominantly summer; class of livestock is primarily cattle with some sheep and horse use Appendix 11 (Allotment Statistics) and Map 1.

Average livestock use is 5,835 AUMs. This is more than active preference because 157 AUMs have been allowed on a nonrenewable basis in the Blue Mountain allotment, due to sagebrush treatments and an Allotment Management Plan.

Average livestock use in this locality is currently near the active grazing preference. Average wildlife use is currently 1,768 AUMs, 768 AUMs above the allocated 1,000 AUM level. Thus, an apparent conflict in utilization of available forage by livestock and wildlife exists. The degree of noncompetitive use of available forage by livestock and wildlife was not fully considered during the inventory process of the 1960's (Oldroyd 1984). Additional monitoring studies may be needed to clarify the situation.

The grazing pattern for most allotments is season



## CHAP. 3 — AFFECTED ENVIRONMENT

long. An AMP has been developed and implemented on one allotment. In addition, a grazing system has been implemented on one allotment on a voluntary basis by the permittee.

Range studies show heavy utilization (61 to 80 percent) on three allotments (Blue Mountain, Stuntz Valley, and Point of Pines) and trend studies appear to show a slight downward trend. Sagebrush is increasing at the expense of grass and forb species on these three allotments (BLM 1983). Data from range studies are either not available or incomplete on the remaining three allotments.

From 1962 to 1966, approximately 11,000 acres of sagebrush were sprayed on the Point of Pines, Stuntz Valley, Doc's Valley, and Blue Mountain allotments. Present carrying capacity ratings for livestock and wildlife reflect the benefits derived from these land treatments. However, the benefits gained have greatly decreased as a result of reinvasion of sagebrush. Retreatment is needed to maintain the current grazing numbers of livestock and wildlife. In recent years, there has been some restraint imposed on sagebrush control in order to protect sage grouse habitat.

### **Bonanza-Rainbow Locality.**

This locality is the largest of the four localities. The most prominent landmarks are the White River which flows through the center of the area and the Green River which makes up a portion of the western boundary. Elevation ranges from 4,800 feet to 6,800 feet. The area is composed mainly of desert shrub with pinyon and juniper in the higher elevations. This locality is approximately 633,200 acres in size. Soils and vegetation have been classified into ecological sites and rated for condition as summarized in Appendix 10 (Ecological Sites and Condition by Locality). Approximately 9,000 acres are rated in poor ecological condition, 257,500 acres in fair condition, 343,800 acres in good condition, and 22,800 acres in excellent condition. Maps and detailed ecological site and condition data are found in the Vernal District Office inventory files.

This locality contains 30 allotments (Map 1). Average livestock use is 37,352 AUMs. Active preference is 61,323 AUMs. This amounts to 39 percent nonuse. The season of use for livestock is dominantly winter and early spring; the class of livestock is mostly sheep with cattle use along the rivers and at the higher elevation Appendix 11 (Allotment Statistics). The grazing pattern for most allotments is season long. There are six AMPs completed. One AMP is winter use only and the other AMPs use a deferred rotation system to rotate spring use.

This locality is normally grazed with snow on the ground; hence, water for livestock is normally not a problem. However, increased waters would provide im-

proved livestock distribution during the spring and fall and help prevent over utilization of areas around current water sources.

There are two antelope herd units within the locality, herd unit 7 and the East Bench herd. At the time the area was adjudicated, 312 AUMs were allocated for antelope (without regard for non-competitive use) in herd unit 7; and because of the small amount of antelope use, no AUMs were allocated on East Bench. Current antelope demand in herd unit 7 amounts to 592 AUMs annually. The antelope herd on East Bench presently requires 170 AUMs and the herd is expected to increase. This apparent deficit in antelope demand is currently absorbed by the high level of nonuse taken by livestock.

Although habitat for deer is generally marginal, portions of deer herd units 26 and 28A lie within this locality. No major forage problems exist. However, certain key habitat areas, such as along the Green and White Rivers and in the higher pinyon and juniper areas, present the possibility of localized forage competition between livestock and wildlife.

The wild horse herd within this locality was not adjudicated for in the 1960's. Currently, this herd consumes approximately 480 AUMs of forage annually. Nonuse taken by livestock has prevented over utilization of the range.

Overall, range studies indicate that trend is stable to slightly upward and utilization is light in most areas. In a few areas along the Green River, trend studies appear to show a slight downward trend (BLM 1983).

### **Book Cliffs Locality.**

The Book Cliffs locality consists of the upper portion of the Roan Plateau between the Uintah-Ouray Indian Reservation and the Utah-Colorado state line. Elevations range from 6,200 feet to 8,700 feet. The locality is composed of long north-sloping ridges and drainages of the Roan Plateau. The vegetation is pinyon-juniper, Douglas fir, browse, sagebrush, grass and small areas of aspen. This locality is approximately 304,000 acres in size. Soils and vegetation have been classified into ecological sites and rated by condition as summarized in Appendix 10 (Ecological Sites and Condition by Locality). Maps and detailed ecological site and condition data are found in the Vernal District Office. Approximately 400 acres are rated in poor ecological condition, 64,200 in fair condition, 195,900 in good condition, and 43,500 acres in excellent ecological condition.

This locality contains 8 allotments (Map 1). Four of these allotments have grazing systems that either defer or rest pastures during the critical growing season. The degree of rest for these pastures vary by AMP according to terrain and livestock movement. Three allotments have season long use. One allotment is managed by BLM in Colorado.



## CHAP. 3 — AFFECTED ENVIRONMENT

Average livestock use is 17,351 AUMs. Active preference for livestock is 23,174 AUMs. This amounts to approximately 25 percent nonuse. The season of use for livestock is predominantly summer and fall. The class of livestock is mostly cattle Appendix 11 (Allotment Statistics).

This locality represents a major portion of deer herd unit 28A and elk herd unit 21. Inventories conducted in the 1960's set aside a total of 38,867 AUMs for deer in this locality. It has since been assumed that elk would also share in the utilization of the wildlife AUMs even though elk use was initially very minor. Current deer use is 12,784 AUMs (for the entire herd unit 28A area) and current elk use is 3,192 AUMs (for the entire herd unit 21). Therefore, 22,891 AUMs allocated to wildlife are not currently being utilized. It should be noted that deer numbers were significantly higher during the 1960's than at present. This accounts for the difference between present and adjudicated demands. It should also be noted that allowance for non-competitive use of available forage by livestock and wildlife was only partially considered during the inventory process of the 1960's (Oldroyd 1984). Additional monitoring studies may be needed to clarify the situation.

Lower McCook Ridge is considered crucial for wintering deer and elk. It is also an important grazing and trailing area during the spring and fall for livestock.

The wild horse herd within this locality was not adjudicated for in the 1960's. Currently, the herd consumes approximately 108 AUMs of forage annually. Nonuse taken by livestock has prevented over utilization of the range.

Range studies indicate that overall, trend is slightly upward and utilization is generally light with some areas of moderate and heavy use in canyon bottoms and treated areas.

The key forage production areas in this locality for both livestock and wildlife are the drainage bottoms. Historically, livestock and wildlife use have been concentrated in the drainage bottoms due to terrain and the availability of water. Many of these bottoms have been overtaken by dense, overmature stands of sagebrush in the higher elevations and invasions of greasewood in the lower elevations. Treatment of these areas through vegetative manipulation would greatly increase their utility for both livestock and wildlife.

Many of the ridges have an abundance of forage that is not useable because of the lack of water. Some of the ridges have been treated mechanically to increase forage. Without maintenance of these land treatments and development of additional water sources, much of this forage would not effectively be utilized and the current imbalance in the pattern of use of the ridges and drainage bottoms would continue.

### Hill Creek Locality.

This locality is bounded on the west by the Green River and on the north and west by Willow Creek. The west half of this locality is separated from the rest of the BCRA by the Uintah-Ouray Indian Reservation. The area is composed of north-sloping benches cut by steep-walled canyons. The elevation ranges from 4,600 feet to 6,900 feet. The vegetation is composed mainly of desert shrub with pinyon-juniper at the higher elevations. This locality is approximately 140,000 acres in size. Soils and vegetation have been classified into ecological sites and rated for condition as summarized in Appendix 10 (Ecological Sites and Condition by Locality). Approximately 3,900 acres are rated in poor ecological condition, 34,300 acres in fair condition, 98,100 acres in good condition, and 3,700 acres in excellent ecological condition. Maps and detailed ecological site and condition data are found in the Vernal District Office inventory files.

This locality contains 12 allotments (Map 1). Average livestock use is 6,442 AUMs. Active preference for livestock is 12,631 AUMs. This amounts to 49 percent nonuse. The season of use is dominantly winter and early spring with some summer use along the Green River. The class of livestock is mostly sheep with some cattle use along Willow Creek, the Green River, and some higher benches (Appendix 11, Allotment Statistics).

The grazing pattern for most allotments is season long. There are 2 AMPs within the locality. Both AMPs use a deferred rotation grazing system.

This locality is normally grazed with snow on the ground. Hence, water for livestock is normally not a problem. However, increased waters would provide improved livestock, wildlife, and wild horse distribution during the spring and fall and help prevent over utilization of areas around current water sources.

A part of deer herd unit 28A falls within this locality. Five hundred AUMs have been allocated for wildlife and deer forage is considered adequate. However, in recent years, increasing numbers of elk coming off the Uintah-Ouray Indian Reservation have been wintering in this area. No forage has been allocated for this use and no studies have been completed to determine the AUMs removed.

The wild horse herd within this locality is the largest within the District. Forage was not adjudicated for this herd in the 1960's. Currently, the 157 horse herd consumes 1,884 AUMs annually. Nonuse taken by livestock users has minimized the impact of wild horse utilization.

Trend in this locality is generally stable. General observations on sheep allotments show utilization to be



light with moderate use in key areas. Use on cattle allotments is moderate in the bottoms and light on the benches (observations by BCRA personnel).

### Endangered, Threatened, or Sensitive Plants

Within the BCRA, the following plants have been listed as endangered, threatened or sensitive and under review for listing (Federal Register, December 15, 1980, and Federal Register, November 28, 1983, Supplement to Review of Plant Taxa for Listing).

#### Endangered

None

#### Threatened

*Sclerocactus glaucus* (Cactus, Hookless) (Uintah Basin)

#### Sensitive

*Arabis sp. nov.* (Rock Cress) (Gray Knolls, Uintah County)

*Astragalus hamiltonii* (Milk-vetch, Hamilton)

*Astragalus lutosus* (Milk-vetch, Dragon)

*Astragalus equisolensis* (Milk-vetch) (Horseshoe Bend, Uintah County)

*Cryptantha barnebyi* (Catseye, Barneby)

*Festuca dasyclada* (Fescue, Sedge)

*Glaucocarpum suffrutescens*

*Lepidium barnebyanum* (Pepper Cress, Barneby)

*Oenothera accutissima* (Evening-Primrose) (Moffat, Daggett, & Uintah Counties)

*Penstemon grahamii* (Beardtongue, Graham)

*Penstemon goodrichii*

*Penstemon albifluvis* (Beardtongue) (White River, Uintah County)

*Thelypodopsis argillacea* (Thelypody, Clay)

The BCRA has been inventoried for endangered, threatened, and sensitive plant species. Known plant locations and potential habitat have been identified (Figure 3-9). However, specific locations are purposely not shown to protect the populations from collectors. These areas total over 300,000 acres and occur throughout the BCRA. Refer to Figures 3-1 through 3-8 to determine where this potential habitat coincides with potential oil and gas, oil shale, gilsonite, and tar sand development areas.

Since most of the sensitive species are associated with unique soils or other environmental factors that limit their distribution, the areas shown in Figure 3-9 merely indicate where these species could occur.

## WILDLIFE AND WILD HORSES

Crucial wildlife habitat delineation was based on Utah Division of Wildlife Resources (UDWR) data and observations, a recently completed BCRA deer study (Karpowitz 1983), and BLM observations and inventory.

Assignment of current condition ratings were made for the crucial seasonal wildlife and wild horse habitats found within the BCRA. Habitat areas were assigned ratings of excellent, good, fair, or poor based on the ecological site, condition, and soils inventory (BLM 1982), and observations and existing wildlife data. Habitats rated in either fair or poor ecological condition were considered "unsatisfactory" for supporting manageable wildlife and wild horse populations. Habitats rated either excellent or good were considered "satisfactory". It should be noted that habitats rated unsatisfactory are capable of improvement into the satisfactory category as a result of the application of a variety of management practices (rotation of grazing, vegetation manipulation, reseeding, etc.). The various factors (overgrazing, maturation of vegetation, etc.) potentially responsible for portions of wildlife habitats being rated in fair or poor condition, cannot be determined with information currently available ((BLM 1982), Table 3-2, (Amount and Condition of Crucial Wildlife Habitat)).

It was assumed that all wildlife and wild horse habitat and forage discussed in this document occurred on Federal lands only. It is known that wildlife and wild horses also utilize adjoining State and private lands for forage and habitat and freely travel between Federal and non-Federal lands. The BCRA consists of approximately 76 percent Federal and 24 percent non-Federal lands.

It has been assumed, therefore, that a comparable percentage of AUMs (in terms of forage) are available to, and utilized by, wildlife and wild horses from non-Federal lands.

In addition, it is known that mule deer on Blue Mountain (deer herd unit 26) regularly move back and forth between BLM-administered lands and lands administered by the National Park Service (NPS) as part of Dinosaur National Monument (Franzen 1968). It has been estimated that a total of 1,325 AUMs are utilized annually by this deer herd from NPS lands (Kennedy 1983). They have also been included in subsequent forage discussions (see Chapter 4).



# THREATENED, ENDANGERED OR SENSITIVE PLANTS

Figure 3 - 9



Threatened, Endangered or Sensitive  
Plant Habitat

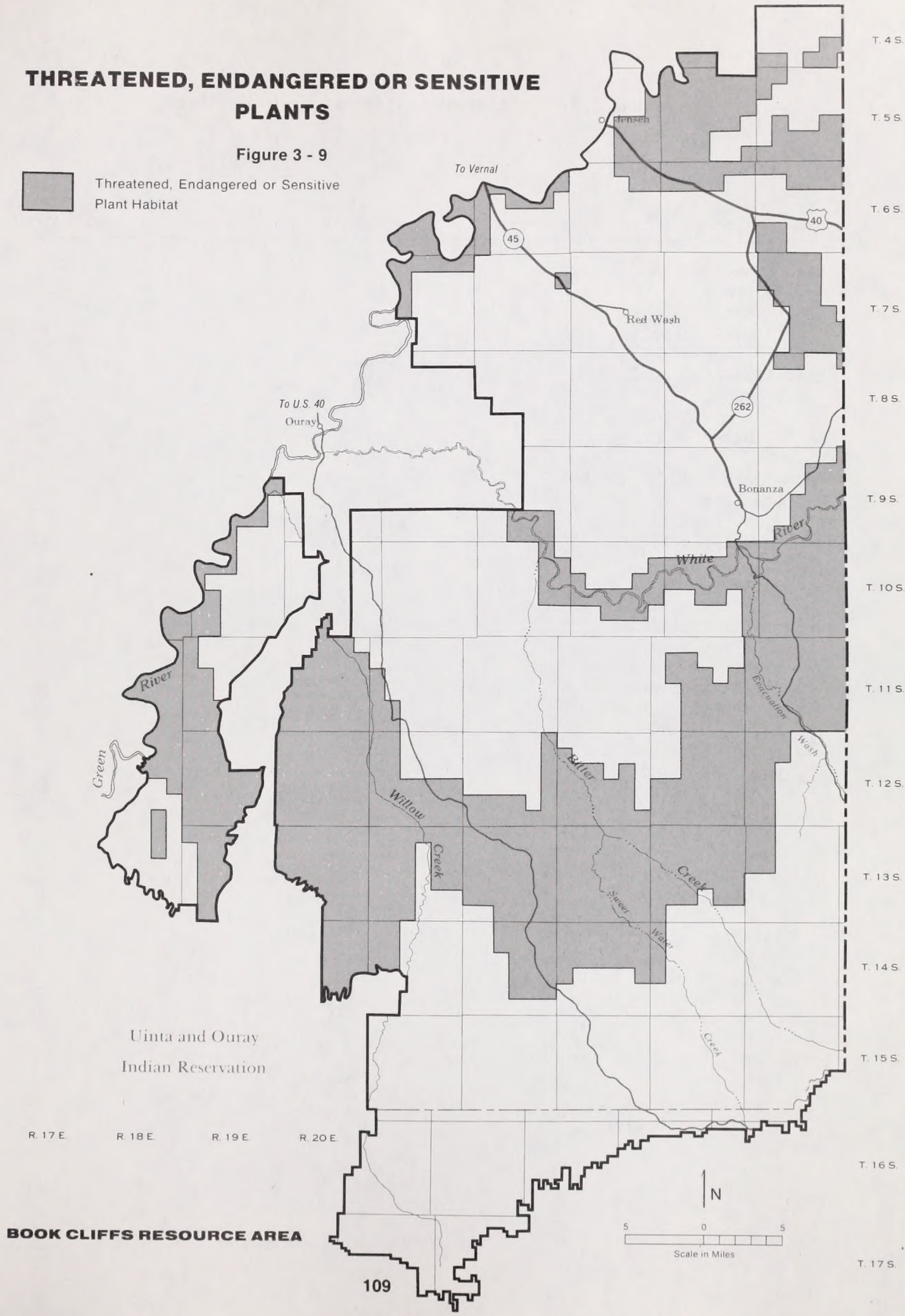




Table 3-2

## Amount and Condition of Crucial Wildlife Habitat

TYPE OF HABITAT BY SPECIES BY AREA*	CURRENT CONDITION	
	ACRES**	PERCENT OF TOTAL AVAILABLE
Antelope-BONANZA		
yearlong		
Satisfactory	36,200	45
Unsatisfactory	44,700	55
Antelope-EAST BENCH		
yearlong		
Satisfactory	<u>63,900</u>	<u>63</u>
Unsatisfactory	<u>37,600</u>	<u>37</u>
Mule Deer-BLUE MOUNTAIN		
yearlong		
Satisfactory	50	5
Unsatisfactory	1,050	95
summer		
Satisfactory	<u>15,700</u>	80
Unsatisfactory	<u>4,000</u>	20
winter		
Satisfactory	<u>20,400</u>	<u>69</u>
Unsatisfactory	<u>9,100</u>	<u>31</u>
Mule Deer-BOOK CLIFFS		
yearlong		
Satisfactory	<u>28,000</u>	<u>54</u>
Unsatisfactory	<u>24,100</u>	<u>46</u>
summer		
Satisfactory	<u>84,400</u>	<u>83</u>
Unsatisfactory	<u>17,800</u>	<u>17</u>
fawning	<u>54,100</u>	
winter		
Satisfactory	<u>113,100</u>	<u>76</u>
Unsatisfactory	<u>35,600</u>	<u>24</u>
Elk-BOOK CLIFFS		
summer		
Satisfactory	<u>90,000</u>	82
Unsatisfactory	<u>19,500</u>	18



Table 3-2 (Continued)

## Amount and Condition of Crucial Wildlife Habitat

TYPE OF HABITAT BY SPECIES BY AREA*	CURRENT CONDITION	
	ACRES**	PERCENT OF TOTAL AVAILABLE
calving	<u>54,100</u>	
winter		
Satisfactory	<u>142,900</u>	<u>74</u>
Unsatisfactory	<u>49,400</u>	<u>26</u>
Sage Grouse		
Strutting/Nesting	12,000	
Wild Horses-BONANZA		
yearlong		
Satisfactory	32,500	69
Unsatisfactory	14,800	31
Wild Horses-HILL CREEK		
yearlong		
Satisfactory	31,100	88
Unsatisfactory	4,300	12
Wildhorses-WINTER RIDGE		
yearlong		
Satisfactory	13,500	89
Unsatisfactory	1,700	11

\*Refer to Figures 3-10, 3-11, 3-12, 3-13.

\*\*Public Land



## CHAP. 3 — AFFECTED ENVIRONMENT

### Big Game

The development of water projects for wildlife, by alternative is referenced in Table 2-1 (Objectives and Actions of the Alternatives). Many areas of suitable wildlife habitat provide adequate forage and cover, yet are not utilized to their fullest extent as a result of the lack of a nearby, reliable water source.

#### Pronghorn Antelope

The locations of antelope herds 7 and East Bench are shown in Figure 3-10. Approximately 80,900 acres of crucial antelope habitat exist for the Bonanza herd, and **101,500** acres of crucial antelope habitat exist for the East Bench herd (Figure 3-10). Roughly 55 percent and **37** percent of the Bonanza and East Bench habitat, respectively, are rated in an unsatisfactory ecological condition. The UDWR population goals for pronghorn are 1,114 head, with approximately 700 at Bonanza and 414 at the East Bench location (Smith 1983).

#### Mule Deer

The locations of mule deer herds 26 and 28A within the BCRA, are shown in Figure 3-11. The BCRA contains approximately **50,200** acres and **303,200** acres, respectively, of seasonally crucial mule deer habitat in the Blue Mountain (herd 26) and Book Cliffs (herd 28A) areas (Figure 3-11). Mule deer are the most abundant big game species within the BCRA.

The majority of livestock grazing levels are compatible with current wildlife populations and objectives. The exception is mule deer herd unit 26 (Blue Mountain) where livestock levels are potentially in conflict with current mule deer numbers. Refer to the forage section for additional discussion.

Yearlong crucial mule deer habitat in the BCRA primarily consists of riparian habitat and totals approximately **53,300** acres, or 15 percent, of the total crucial habitat. Roughly **25,200** acres, or **47** percent, of the yearlong habitat is rated in an unsatisfactory ecological condition (Table 3-2).

Crucial summer mule deer habitat located within the BCRA totals approximately **121,900** acres, or **34** percent, of the total crucial habitat available. Approximately **21,800** acres, or **18** percent, of the total **summer habitat** is rated in an unsatisfactory ecological condition (Table 3-2).

Crucial mule deer fawning habitat, identified for the Book Cliffs herd area (28A), consists of approximately **54,100** acres, or **53** percent, of the crucial summer range (**18** percent of the total herd unit crucial habitat).

Considering the total crucial mule deer habitat available in the BCRA, **178,200** acres, or **59** percent, is crucial winter habitat. Perhaps the most significant deer winter habitat is the lower McCook Ridge area, where a large percentage of herd unit 28A spends the winter.

Of the winter habitat, **44,700** acres, or **25** percent, is rated in an unsatisfactory ecological condition (Table 3-2).

The Monument Ridge migration corridor consists of approximately 29,100 acres, or 8 percent, of the crucial mule deer habitat found within herd unit 28A (Book Cliffs). This habitat zone is utilized for approximately 2 to 3 weeks in the spring and 2 to 3 weeks in the fall as deer migrate from one seasonal use area (winter/summer) to the other.

The UDWR population goals for mule deer are 20,300 head, with 2,300 for Blue Mountain (herd unit 26), and 18,000 for Book Cliffs (herd unit 28A) (Smith 1983).

#### Rocky Mountain Elk

The location of elk herd unit 21 within the BCRA is shown in Figure 3-12. Approximately **301,900** acres of seasonally crucial elk habitat occur in the BCRA, entirely located within the Book Cliffs (herd 21) Management Unit (Table 3-2) (Figure 3-12). ***Roughly 36 percent, or 109,500 acres, is crucial summer habitat. Of that amount, 54,100 acres, or 49 percent of the available crucial summer habitat, has been identified as crucial calving habitat.*** Approximately 18 percent of the summer habitat is rated in an unsatisfactory ecological condition, as a result of overgrazing by livestock and wildlife, and as a result of the habitat becoming over-mature (Table 3-2).

Crucial winter elk habitat consists of approximately **192,300** acres, or **64** percent, with **49,400** acres, or **26** percent, rated as unsatisfactory ecological condition (Table 3-2). The UDWR population goals for elk **on BLM-administered lands** are 2,300 head, all located within the Book Cliffs (herd unit 21) area (Smith 1983).

#### Upland Game Birds/Waterfowl

Sage grouse, blue grouse, chukar, and ruffed grouse are known to occur within the BCRA. The locations of known sage grouse leks are shown in Figure 3-13. Approximately 12,000 acres of crucial sage grouse habitat have been delineated for the BCRA (Table 3-2). Habitat for blue and ruffed grouse, and chukar is scattered throughout various portions of the BCRA and is not as easily definable as habitat for sage grouse. ***Wild turkey populations previously existed in the BCRA. Turkeys were observed on McCook, Monument, and Boulevard Ridges in the late 1960s (Durfee 1971).***

Waterfowl occur throughout the BCRA with concentrations of goose and duck nesting and winter utilization along the Green and White Rivers. Livestock grazing limits nesting cover for waterfowl.



# **ANTELOPE HERD LOCATIONS AND CRUCIAL HABITAT**

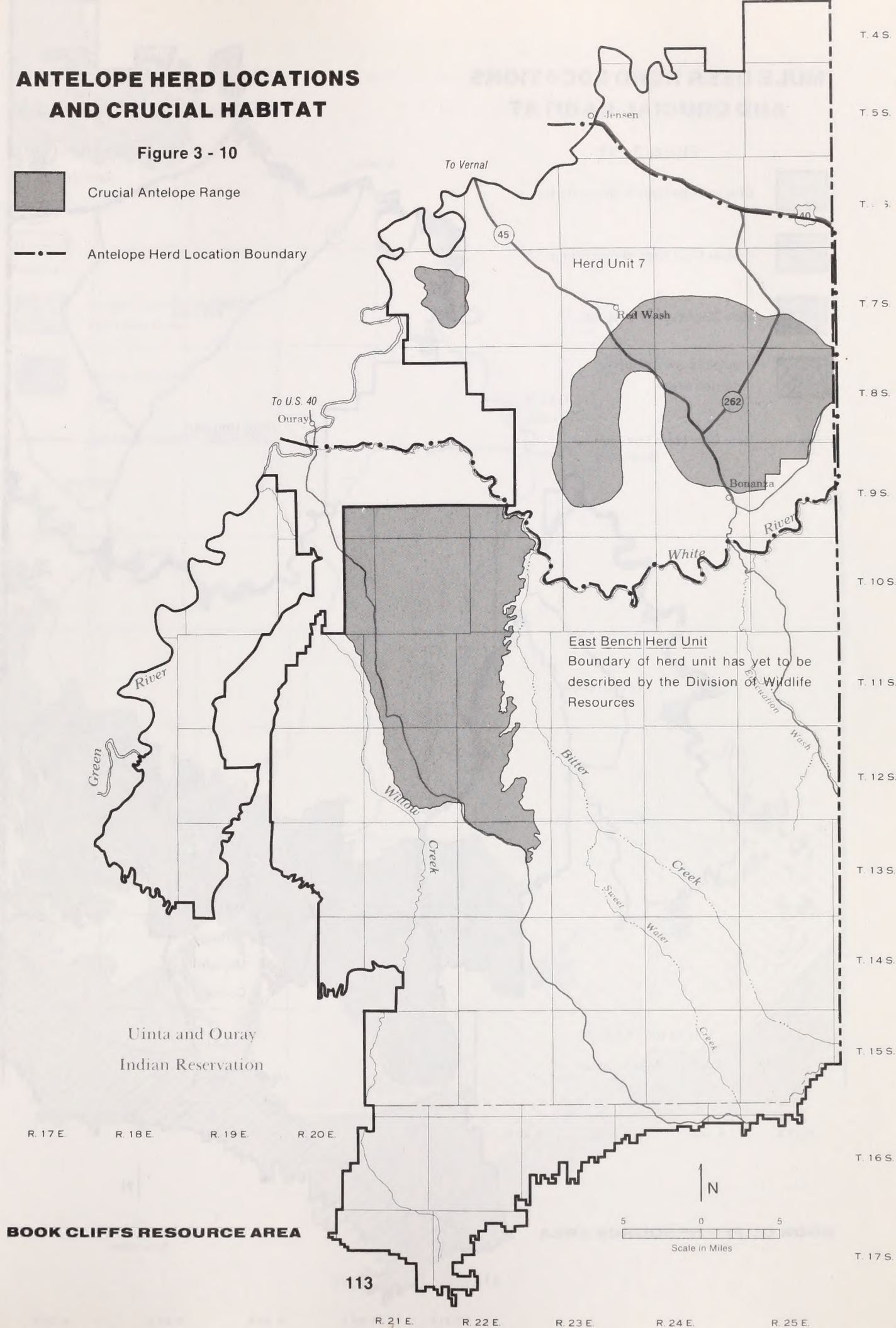
**Figure 3 - 10**



Crucial Antelope Range








Antelope Herd Location Boundary

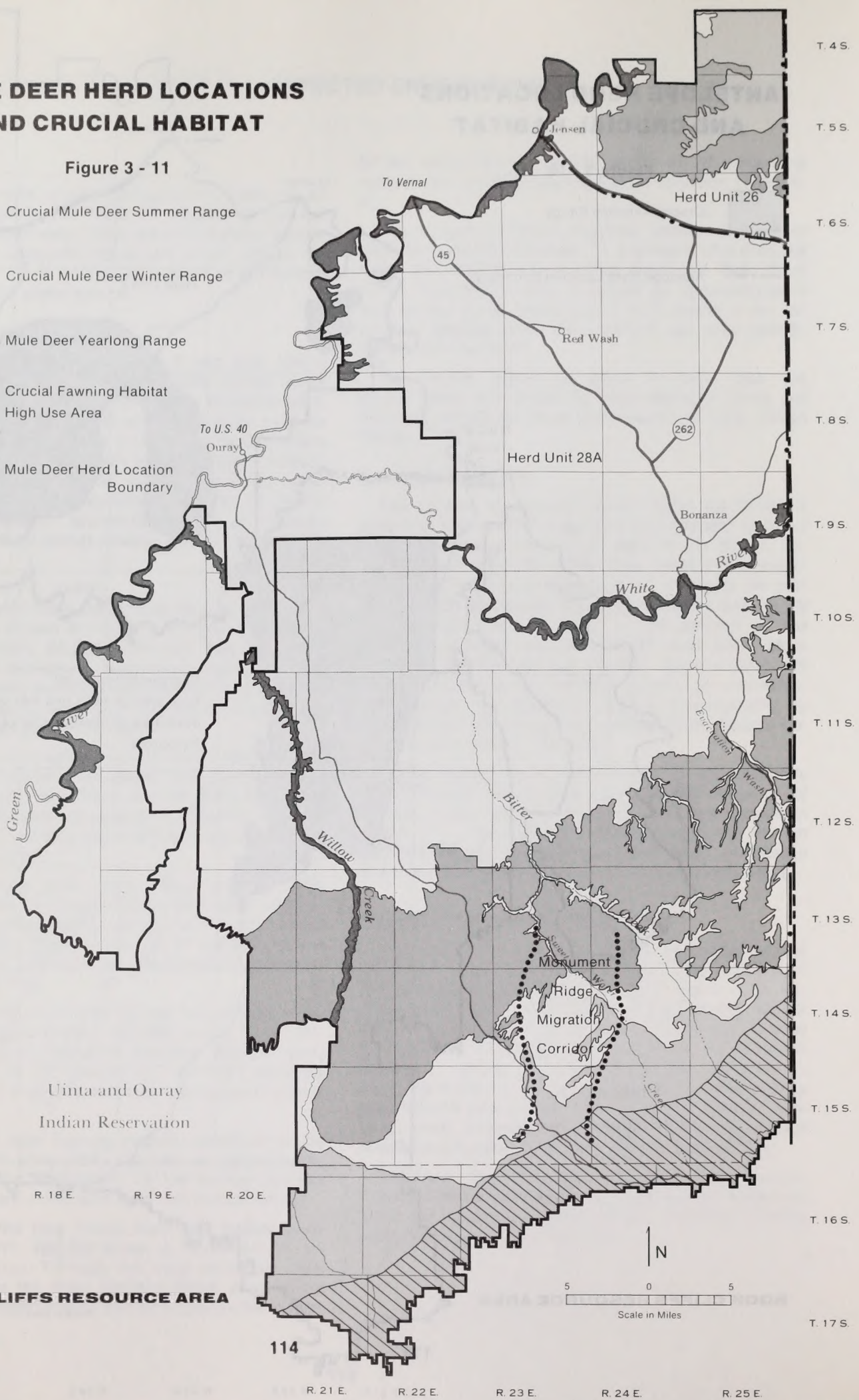




# MULE DEER HERD LOCATIONS AND CRUCIAL HABITAT

Figure 3 - 11

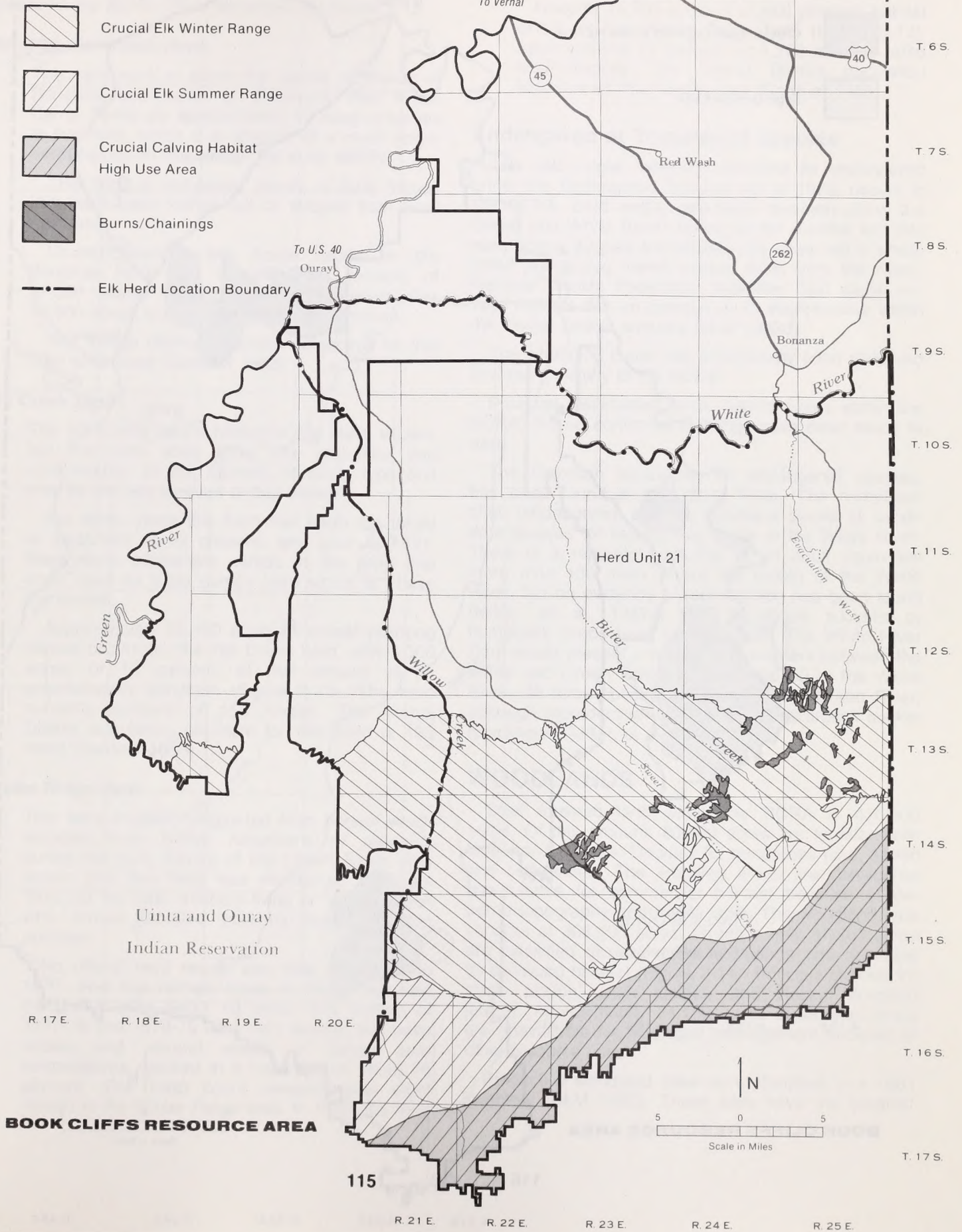
-  Crucial Mule Deer Summer Range
-  Crucial Mule Deer Winter Range
-  Mule Deer Yearlong Range
-  Crucial Fawning Habitat High Use Area
-  Mule Deer Herd Location Boundary





# ELK HERD LOCATIONS AND CRUCIAL HABITAT

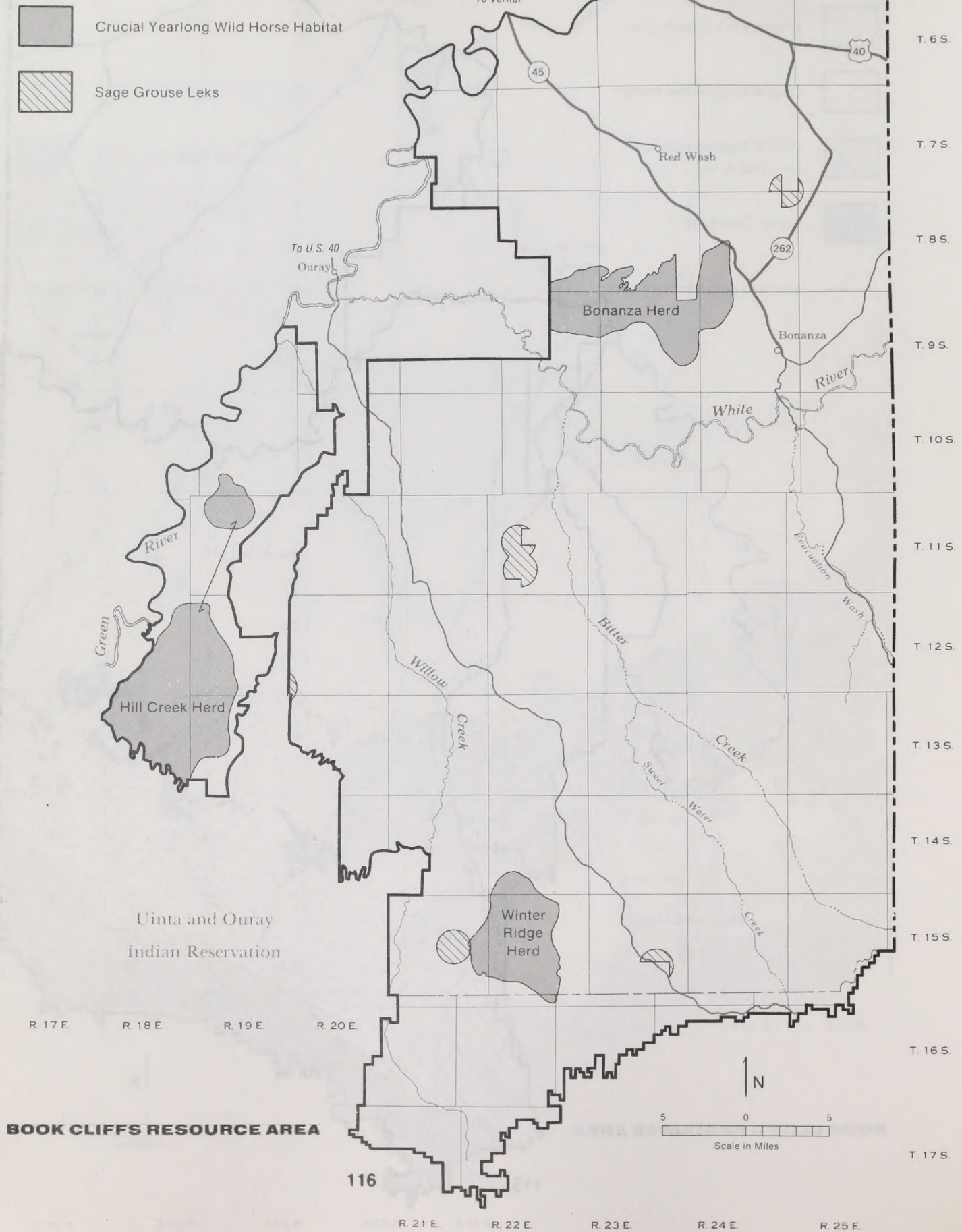
Figure 3 - 12





# WILD HORSE CRUCIAL YEARLONG HABITAT AND SAGE GROUSE LEKS

Figure 3 - 13



BOOK CLIFFS RESOURCE AREA



## CHAP. 3 — AFFECTED ENVIRONMENT

### Wild Horses

At present, there are three distinct herds of wild horses on the BCRA. They are shown on Figure 3-13.

#### Bonanza-Red Wash Herd

This herd runs in about five bands northwest of Bonanza and south of Chevron's Red Wash Camp. There are approximately 40 head of horses in this herd, which is a remnant of a much larger herd that ran in this area in the early 1900's.

This herd is composed mostly of feral horses that have been turned out or strayed from local ranchers.

Crucial yearlong wild horse habitat in the Bonanza herd area (Figure 3-13) consists of 47,300 acres. Approximately 31 percent, or 14,800 acres, is in an unsatisfactory condition.

The Vernal District population objective for this herd is 50 head (Gardner 1983).

#### Hill Creek Herd

The Hill Creek herd's history is not really known, but the herd does show the coloration and conformation of the Spanish Mustang type and may be the last remnant of that breed.

For many years this herd had been the target of local wild horse chasers; and prior to 1971, there were permanent camps in the area that were used as base camps from which to chase the horses.

Approximately 35,400 acres of crucial yearlong habitat occurs for the Hill Creek herd, with 4,300 acres, or 12 percent, of that amount in an unsatisfactory condition (Figure 3-13). The herd currently consists of 158 horses. The Vernal District population objective for this herd is 195 head (Gardner 1983).

#### Winter Ridge Herd

This herd probably originated from horses which escaped from Native Americans or ranchers during the early history of the Uintah Basin. It is known that this herd was maintained and kept "bred up" by local ranchers living on Willow Creek who turned blooded stallions loose for that purpose.

No official herd record was ever kept prior to 1977. The first record, made in 1977, indicated that there were about 40 head. The winters of 1977-78 and 1978-79 were very severe, and deep snows and several weeks of below zero temperatures resulted in a herd loss of about 70 percent. The 1980 count revealed only eight horses in the Winter Ridge area. In 1982, the herd

consisted of six adults and two colts (Gardner 1983).

Roughly 15,200 acres of crucial yearlong habitat exists for the Winter Ridge herd (Figure 3-13). Approximately 11 percent, or 1,700 acres is rated unsatisfactory. The Vernal District population objective for this herd is zero (Gardner 1983).

### Endangered or Threatened Species

The bald eagle, federally classified as endangered under the Endangered Species Act of 1973, occurs in the BCRA. Bald eagles are fairly common along the Green and White Rivers during winter months and into early spring. Eagles are occasionally observed in white-tailed prairie dog towns several miles from the rivers. National Wildlife Federation midwinter bald eagle surveys indicate that an average of 45 eagles occur within the Vernal District annually (BLM 1983d).

The whooping crane has occasionally been observed in close proximity to the BCRA.

Potential blackfooted ferret habitat exists within the BCRA, but no confirmed sightings have been made to date.

The Colorado squawfish, an endangered species, has been found in the White River. The humpback chub (endangered) and the razorback sucker (a candidate species for listing) may occur in the White River. There is a reported capturing of an adult squawfish more than 130 miles above the mouth of the White River, but no evidence of reproduction has been found (Miller, et al. 1982a). No razorback suckers or humpback chubs have been located. The White River Dam would present a barrier to movement between the White and Green Rivers at river mile 50 of the White River. All three species are found in the Green River, although reproductive success of the razorback sucker is unknown (Miller, et al. 1982b).

### WOODLANDS

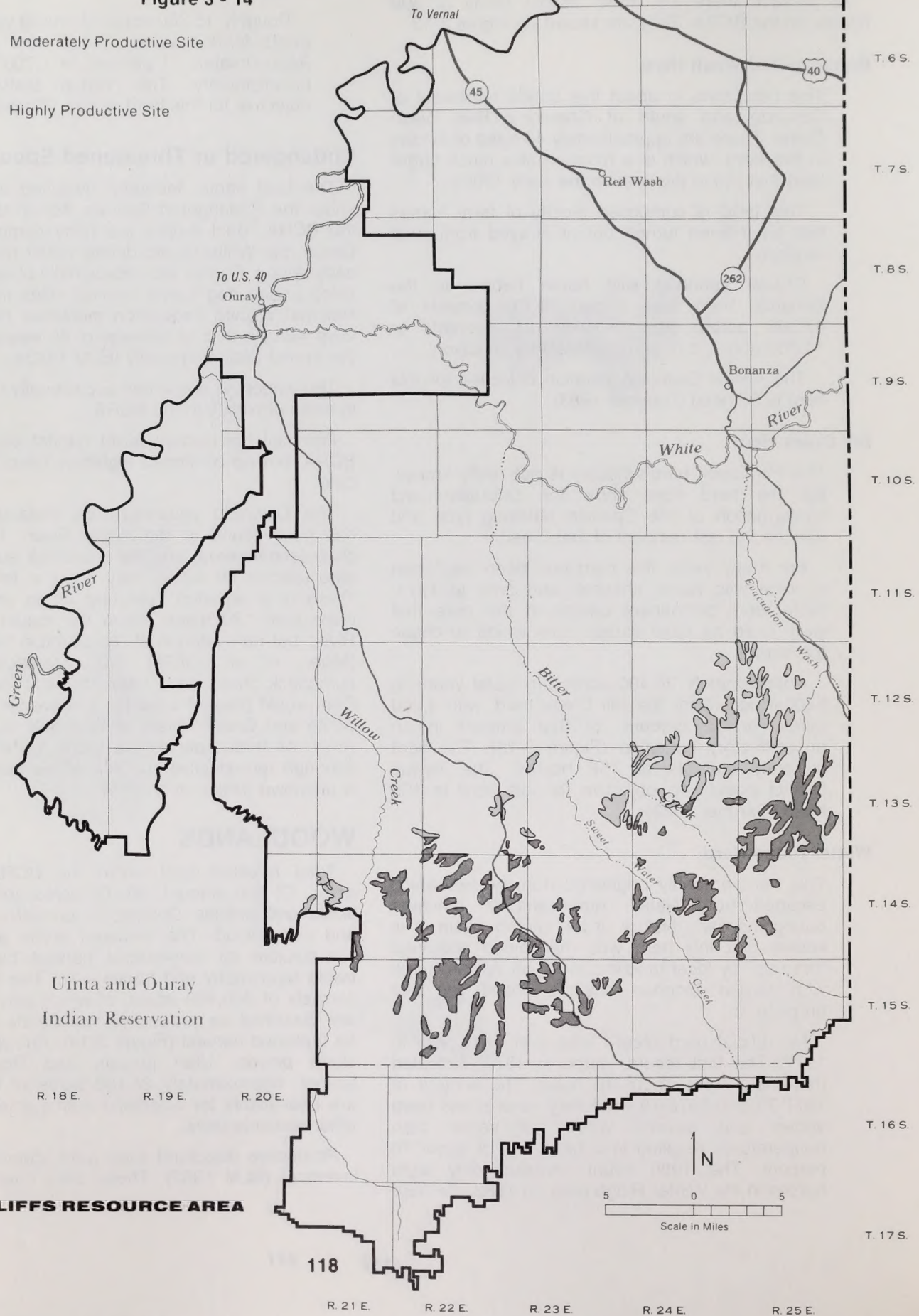
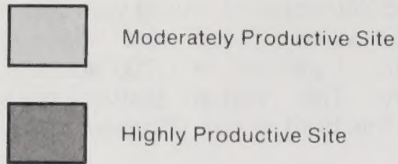
Total forested land within the BCRA is 410,600 acres. Of this amount, 80,100 acres are forested with timberland species: Douglas fir, ponderosa pine, aspen and cottonwood. The timbered areas are considered non-suitable for commercial harvest because of extreme topography and fragile soils. The woodland type consists of 306,400 acres, of which only 47,200 acres are classified as productive woodlands and desirable for fuelwood harvest (Figure 3-14). Principle species include pinyon, Utah juniper, and Rocky Mountain juniper. Approximately 24,100 acres of forested lands are unavailable for woodland management because of other resource uses.

Productive woodland sites were identified in a 1981 inventory (BLM 1982). These sites have the greatest



# PRODUCTIVE WOODLAND MANAGEMENT AREAS

Figure 3 - 14





## CHAP. 3 — AFFECTED ENVIRONMENT

potential for management because they have higher growth rates and volumes per acre, slopes of less than 25 percent, have not been chained or recently burned, and are accessible by road, paths or cross country travel. The productive sites were classified as either high or medium. Stand characteristics for high and medium sites are as follows:

### High Productive Woodland Sites

---

Average volume per acre, green	10.5 cords
Average volume per acre, dead	1.6 cords
Estimated maturation period	125 years

---

#### Stand composition:

---

Pinyon	40 percent or more
Utah juniper	Up to 60 percent
Rocky Mountain juniper	1 percent
Douglas fir	1 to 10 percent
Crown cover	20 to 65 percent

---

High productive woodland sites total 34,100 acres.

### Medium Productive Woodland Sites

---

Average volume per acre, green	7.5 cords
Average volume per acre, dead	1.0 cords
Estimated maturation period	150 years

---

#### Stand composition:

---

Pinyon	15 percent or more
Utah juniper	Up to 85 percent
Rocky Mountain juniper	None
Douglas fir	None
Crown cover	10 to 45 percent

---

Medium productive woodland sites total 13,100 acres.

Nonproductive sites are composed of stands that grow on slopes with grades over 25 percent, are non-accessible, or contain volumes of less than five cords per acre. Most nonproductive sites are found at the lower elevations and contain trees too small to be considered acceptable for firewood harvest. Total acreage is 259,200.

Cottonwood, *Populus fremontii*, grows on some 3,000 acres along the Green River and White River bottoms. Growth is rapid as trees reach a diameter breast height of 24 inches within 65 years. Volume per acre is estimated to be 15 cords for stands reaching maturity. Approximately 300 acres, along the Green River, are accessible for management. Trees along the White River are inaccessible.

Douglas fir grows in even-aged stands on the north and east side slopes and covers some 71,600 acres in the Book Cliffs Mountains. Volume per acre averages 20 cords and rotation age is about 150 years. Most stands are inaccessible and grow on slopes with grades over 25 percent. Although these stands are not regarded as commercial, up to 4,000 acres could be utilized as fuelwood without creating significant conflicts to watershed or wildlife.

The number of sale and free use permits have increased in the past decade. In 1972, approximately 250 cords of wood were sold or given away. Total harvest in 1982 amounted to 2,200 cords in the BCRA.

Demand for firewood has increased as home heating costs have increased. In the Uintah Basin, about 65 percent of the homes use wood as a heating source.

A segment of the wood burning public prefers pinyon and juniper fuel wood. In the Roosevelt and Vernal areas, the only dependable public source of this type of wood is from BLM administered lands.

## RECREATION

The entire BCRA is the Book Cliffs Extensive Recreation Management Area. Limited facilities have been developed at two locations: Musket Shot Spring, a road-side pullover along U.S. Highway 40, and PR Spring, a semi-primitive campsite. The Musket Shot Spring site was constructed as a part of the 1976 Bicentennial Celebration and commemorates a segment of the Escalante Trail traveled by the Spanish Missionaries Dominguez and Escalante, in September 1776. Some vandalism of the interpretive signing and dumping of trash are management problems at the site.

PR Spring is the only recreation site in the resource area that has a developed water supply. It is fenced and contains the remains of a Civilian Conservation Corps Camp.

Dispersed recreation opportunities abound in the BCRA. The most popular forms include hunting, off-road vehicle (ORV) travel, sightseeing, and river floating.

The land plays a supplemental role in the regional recreation setting in that it offers the unique resource of open space where individuals can participate in dispersed activities in an unrestricted setting.

Data collected from October 1, 1981 to September 30, 1982 estimate participation for all recreational activities within the BCRA to be 14,000 visitor days (BLM 1983e). Major outdoor recreation areas adjacent to the BCRA within the Uinta Basin include Dinosaur National Monument and Ashley National Forest.



### Land-Oriented Activities

The Bonanza area has some of the better opportunities for unrestricted cross country travel because of the open nature of the terrain. At higher elevations in the Book Cliffs mountains, where vegetation consists of trees or shrubs, travel is often confined to existing trails and ways. Over the past 10 years, the popularity of ORV activity appears to be increasing. The dominant ORV use is for big and small game hunting, firewood and post cutting, sightseeing and work-related needs. Some spontaneous use occurs south of Jensen on the east side of the Green River that causes damage to vegetation and soil. Because of the distance of the BCRA from population centers, and the availability of alternate sites, little demand presently exists for intensive-use areas. Resource values that conflict with ORV's include: The Boulevard Ridge Watershed Study Area, certain critical and severe erosion areas, antelope, **crucial wildlife areas**, wild horse ranges, **recreation sites**, **scenic corridors**, and the White River Canyon.

South of Township 11 South, on the Uintah and Ouray Indian Reservation, the Ute Indian Tribe has established a Wildlife and Cultural Resource Protection Area and does not permit travel off the established roads (Core 1984). Currently, BLM has not imposed travel restrictions on public lands adjacent to Tribal borders and Tribal members are concerned that inadvertent trespass may occur.

Hunting takes place in the fall and winter and mule deer are the most popular game animal. In the Book Cliffs, approximately 6,800 visitor days, or 48 percent of the total recreational use, is attributable to big game hunting (UDWR 1983).

Fifteen popular camping areas, established by impromptu use of hunters, were set aside in previous years (BLM 1973b; BLM 1974b; BLM 1974d; BLM 1975). A list of features, present status and future potential is identified in Appendix 6 (Campsites Identified in Previous Years for Possible Development). The campsites are located in Figure 3-15. Except for PR Spring, no physical improvements have been made to these sites. Hunters have shown little interest for improved facilities such as sanitation, fire pits, or water systems.

A scenic corridor was established along U.S. Highway 40 from Jensen to the Utah/Colorado border (BLM 1974b). Outstanding panoramas exist along two other highway segments. The first is adjacent to the new Bonanza highway (Utah 45) from Red Wash to the Green River, a distance of 6 miles. The second corridor is along the Book Cliffs Divide road, which extends from PR Spring to Fatty Canyon (Utah/Colorado border), a distance of 20 miles.

Two geologic features, Fantasy Canyon and Duck Rock, contain unique erosional figures, have future interpretive potential but lack protection (Figure 3-15).

Like the camp sites, 6 overlooks were set aside and protected for future development (BLM 1974a, 1974b, and 1975). Three of these sites continue to receive use by recreationists and have retained their aesthetic and scenic values. These sites are Point of Pines, Musket Shot Spring, and Grand Valley overlooks. The other 3 sites are located in remote areas and receive little or no use. The locations of the scenic travel corridors and overlooks are shown in Figure 3-16. A summary of the important characteristics of each overlook appears in Appendix 7 (Scenic Overlooks and Geologic Features).

The Book Cliffs Mountain Browse Natural Area is located on Upper McCook Ridge (Figure 3-16). It contains 400 acres and was set aside to protect a representative sample of the Book Cliffs mountain browse vegetation type. Dominant species include birchleaf mahogany, serviceberry, Gambel oak and big sagebrush. Present management protects the area from livestock grazing and surface-disturbing activities. Recreation use of the Natural Area is very low and consists of limited big game hunting in the fall (BLM 1975). The area has scientific value for the preservation of a vegetative type in its natural condition.

### Water-Oriented Activities

#### White River

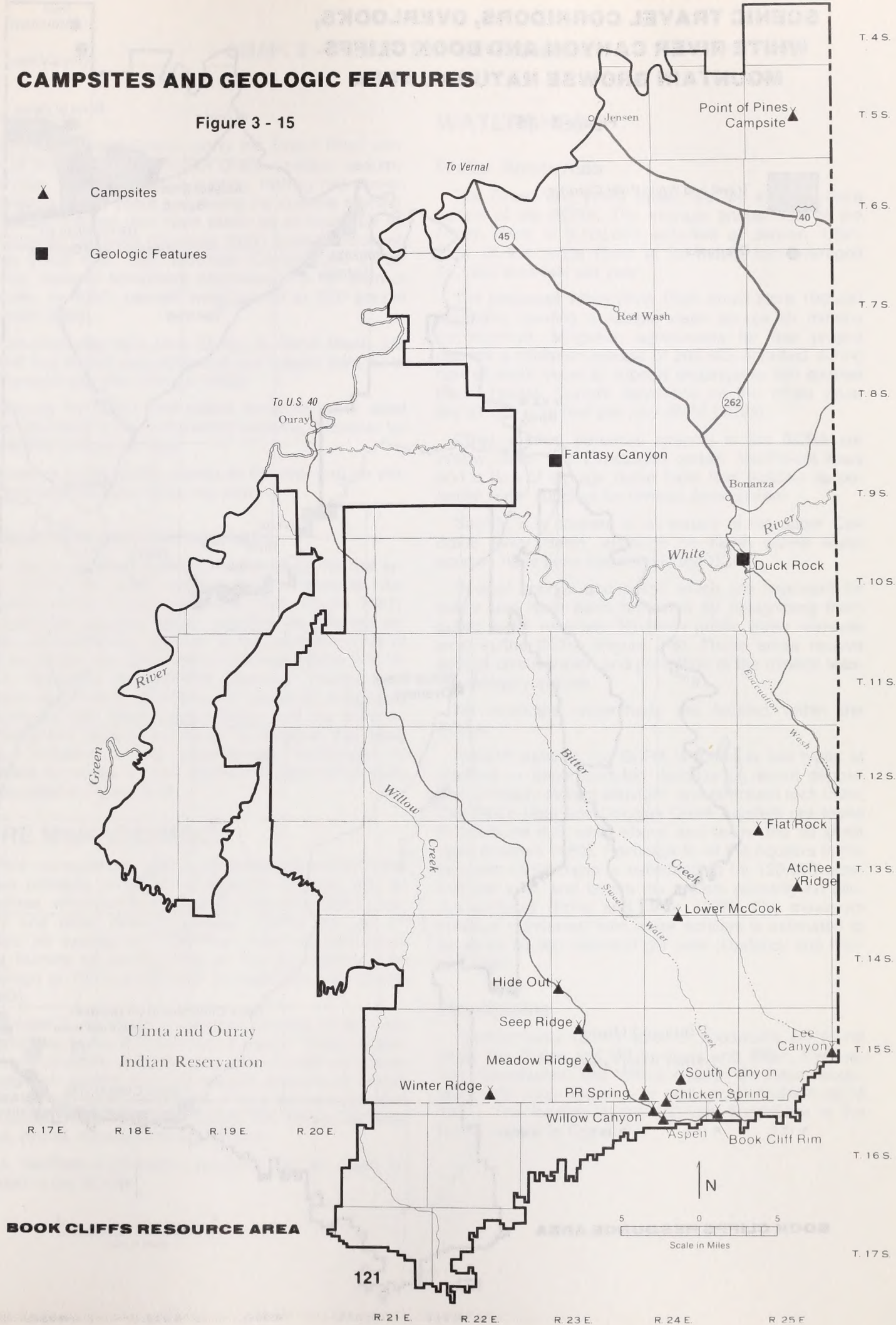
The White River and its desert canyon offer spectacular scenery, remoteness, and relatively safe currents for novice and intermediate rafters and canoeists. Associated opportunities include sightseeing, viewing wildlife, and dispersed camping. Ten years ago, records indicate only one or two float trips per year; but, observation by BCRA personnel in 1983 estimated 40 to 50 float parties (BLM 1973).

After the construction of the proposed White River Dam, recreation use is expected to increase mainly around the lake and somewhat on the river below the dam. Activities focused around the lake will be managed by the State of Utah. Recreation opportunities along the river will continue to be managed by BLM and will include a limited fishery, hiking and possibly river floating. Water flows would be adequate for canoeing and rafting during normal and average water years during May, June and part of July. However, from August through the remaining recreation use period and during drought years, flows would approach the lower limit necessary and may even be inadequate for satisfactory floating.



# CAMPSITES AND GEOLOGIC FEATURES

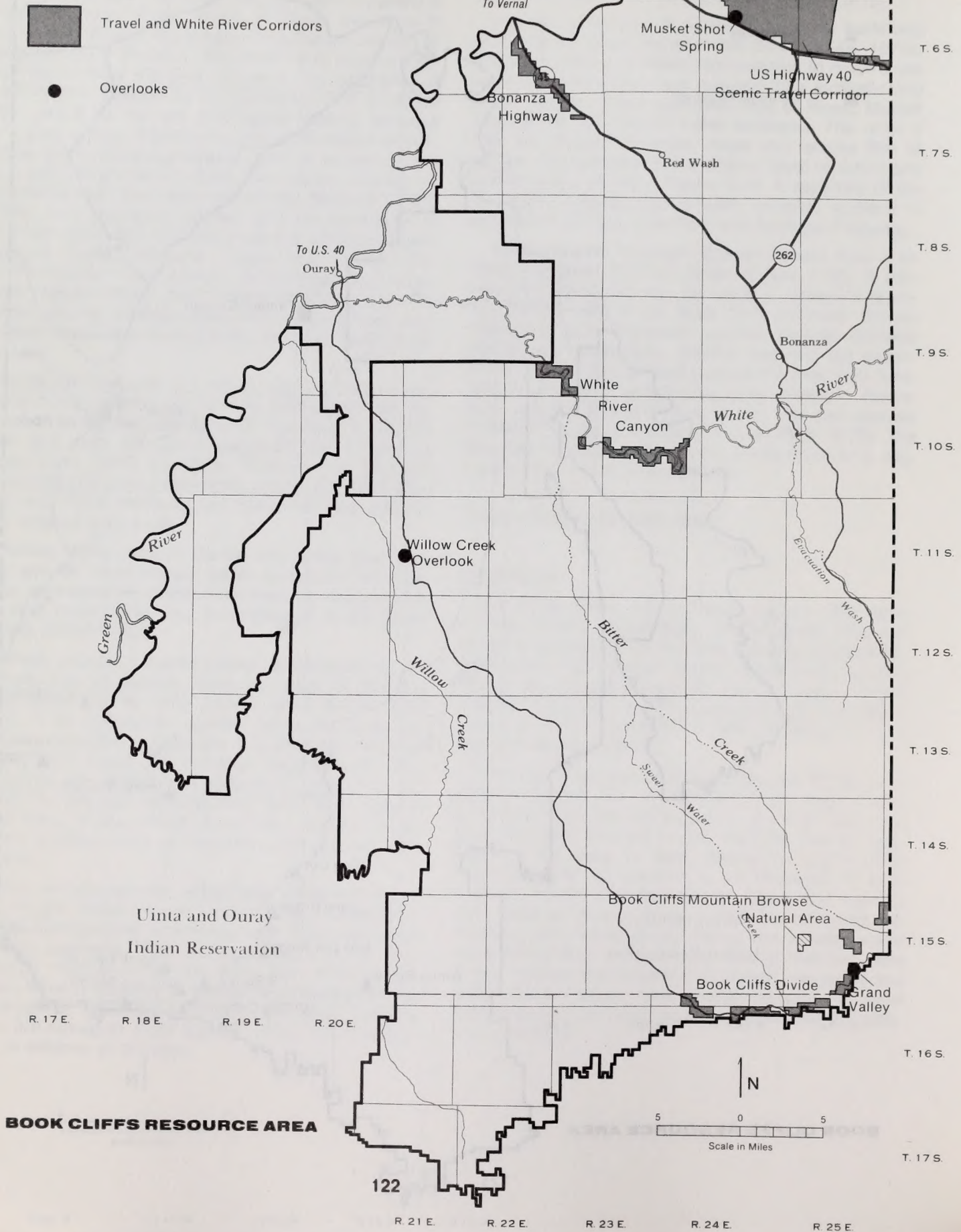
Figure 3 - 15





# SCENIC TRAVEL CORRIDORS, OVERLOOKS, WHITE RIVER CANYON AND BOOK CLIFFS MOUNTAIN BROWSE NATURAL AREA

Figure 3 - 16





### Green River

Recreation opportunities along the Green River consist of river floating, fishing for channel catfish, and limited deer, duck, and goose hunting. Fishing has proven popular in recent years and during the summer months, estimates indicate that there would be at least 100 recreationists per week (Cranney 1983). Most floatboating takes place from Split Mountain Campground at Dinosaur National Monument downstream to the town of Jensen. In 1982, permits were issued to 220 people (Davies 1983).

The river segment from Ouray to Sand Wash (31 miles) has limited popularity and use ranges from 50 to 150 people per year (Kenna 1983).

Hunting for ducks and geese along the river sand bars, and deer in the cottonwood bottoms, accounts for some 400 visitors per year.

There is limited public access to the river and no visitor use facilities exist along the river.

### Visual Resource Management

A visual resource inventory and analysis for the entire BCRA has been completed (Environmental Associates 1979; Flores Associates 1979; Saupe 1981). Management classes, which describe the different degrees of modification allowed to the basic elements of the landscape, are tabulated by acreage (Table 3-3, Visual Resource Management Classes). Management Class I is the most restrictive and applies to designated wilderness and natural areas. Class V is the least restrictive and applies to natural landscapes that have been disturbed to the point where rehabilitation is needed to restore it. The location of each VRM class is depicted in Figure 3-17.

### FIRE MANAGEMENT

Fire management techniques employed in the BCRA have primarily consisted of extinguishing any and all wildfires, wherever they occur, in order to protect property and other resource values. During the last 11 years, an average of 7.6 wildfires have occurred annually, burning an average area of 18.2 acres per fire. An average of 137.4 acres have burned each year (Glenn 1983).

Limited amounts of prescribed burning have been carried out in the BCRA in recent years. These vegetation manipulation projects have concentrated on mature sagebrush canyon bottoms located primarily in crucial deer and elk summer habitats. These projects provided increased wildlife access through the canyon bottoms and, overall, increased forage quality.

A modified suppression program has not been initiated in the BCRA.

## WATERSHED

### Water Resources

The Green and White Rivers are the major surface waters of the BCRA. The average annual flow of the Green River is 3,120,000 acre-feet at Jensen, Utah. Flow of the White River at its mouth has averaged 457,900 acre-feet per year.

The proposed White River Dam would store 109,250 acre-feet, creating a reliable water source for mineral development. Mitigation agreements for that project provide a minimum release of 203,625 acre-feet during normal water years to support endangered fish species (BLM 1982e). Current depletions on the White River are 37,000 acre-feet per year (BLM 1982a).

Other smaller, perennial streams in the BCRA are Willow, Bitter, and Evacuation creeks. Insufficient flows and a lack of storage make them less suitable as potential water supplies for mineral development.

Salinity is a concern in all waters of the upper Colorado River Basin, although no highly saline water sources have been identified in the BCRA.

Several springs and seeps which are important for public use have been protected by designating them public water reserves. Nineteen public water reserves exist in the BCRA (Figure 2-6). These areas receive special consideration and protection in the mineral leasing category system.

No municipal watersheds are located within the BCRA.

Ground water in the BCRA is found in two types of aquifers — unconsolidated deposits of recent deposition, primarily stream alluvium, and structural rock units. The Bird's Nest and Douglas Creek aquifers are found in structural rock units above and below the oil shale layer (Holmes 1980). Recharge to all the aquifers in the southern Uinta Basin is estimated to be 120,000 acre-feet per year, and enters the system primarily on alluvial surfaces (Price and Miller 1975). The maximum practical withdrawal from these aquifers is estimated to be about 20,000 acre-feet per year (Lindskov and Kimball 1983).

### Floodplains

Approximately 16,000 acres of floodplains are found along the Green and White rivers and Bitter, Evacuation, Sweetwater, and Willow creeks. Of these floodplains, 470 acres are in poor ecological condition (BLM 1982). The location of the 100-year floodplains in the BCRA appear in Figure 2-6.



Table 3-3

## Visual Resource Management Classes

Class	Acres*	Percent
I	400	< 1
II	45,000	4
III	74,600	7
IV	932,000	86
V	28,000	3
Total	1,080,000	

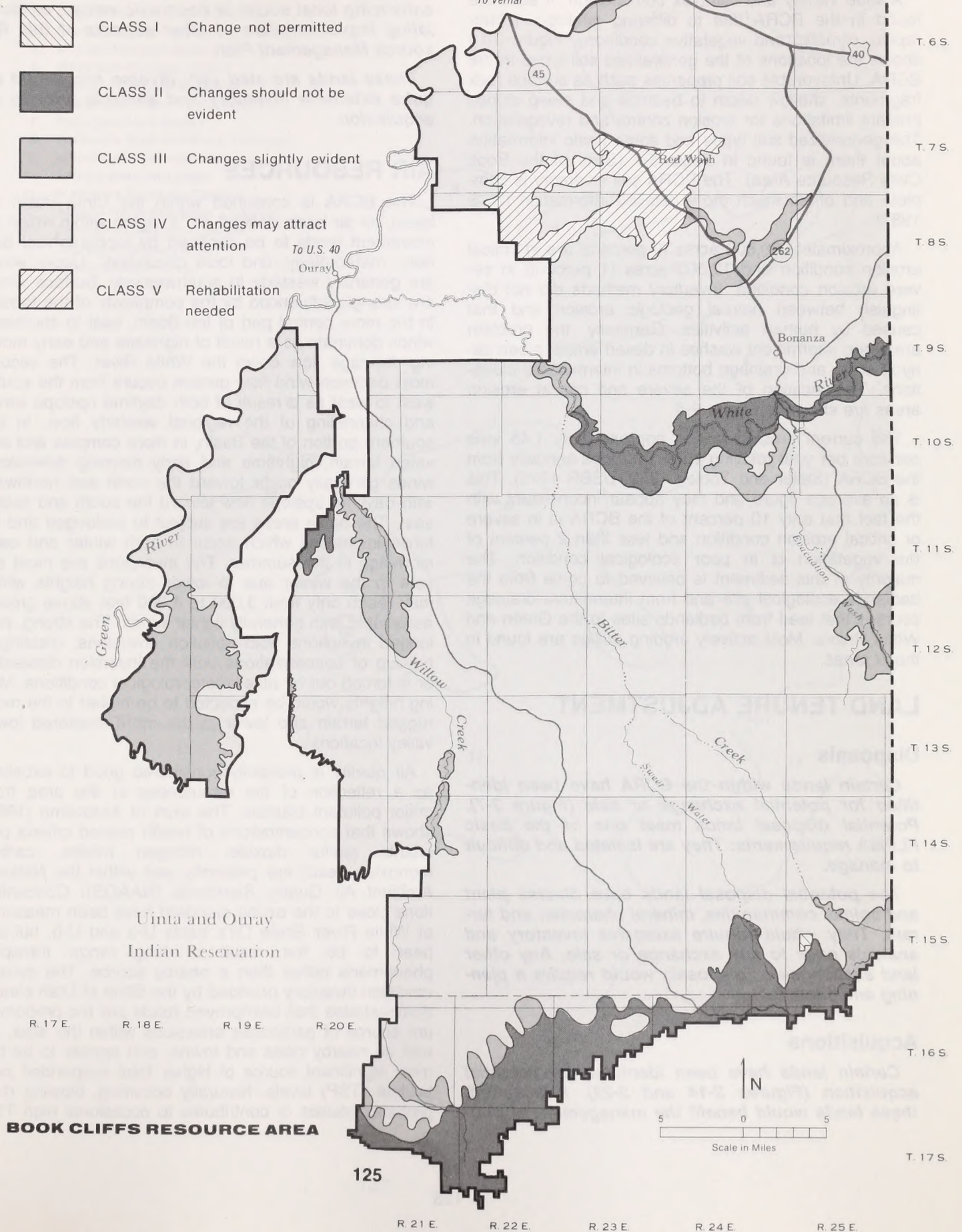
Source: Environmental Associates 1979; Flores Associates 1979; Saupe 1981.

\*Acreage figures were rounded to the nearest hundred.



# **VISUAL RESOURCE MANAGEMENT CLASSES (DIFFERENT DEGREES OF ALLOWABLE VISUAL LANDSCAPE CHANGE)**

**Figure 3 - 17**





### Soils

A wide variety and complex combination of soils are found in the BCRA due to differing geologic, topographic, climatic, and vegetative conditions. Figure 3-18 shows the locations of the generalized soil types in the BCRA. Unfavorable soil properties such as surface rock fragments, shallow depth to bedrock and steep slopes present limitations for erosion control and revegetation. The generalized soil types and some basic information about them is found in Table 3-4 (Soils of the Book Cliffs Resource Area). The BCRA soil inventory is complete and offers much more detailed information (SCS 1982).

Approximately 98,800 acres (9 percent) are in critical erosion condition and 12,300 acres (1 percent) in severe erosion condition. Inventory methods did not distinguish between natural geologic erosion and that caused by human activities. Generally, the problem areas are intermittent washes in desert areas, steep canyon sides and drainage bottoms in intermediate elevations. The location of the severe and critical erosion areas are shown in Figure 2-6.

The current erosion rate is approximately 1.45 tons per acre per year totalling 1,566,000 tons annually from the BCRA (Seiler and Tooley 1982; USBR 1975). This is an average figure and may appear inconsistent with the fact that only 10 percent of the BCRA is in severe or critical erosion condition and less than 2 percent of the vegetation is in poor ecological condition. The majority of this sediment is believed to come from the badlands ecological site and from intermittent drainage courses that lead from badlands sites to the Green and White Rivers. Most actively eroding gullies are found in these areas.

### LAND TENURE ADJUSTMENT

#### Disposals

*Certain lands within the BCRA have been identified for potential exchange or sale (Figure 2-7). Potential disposal lands meet one of the basic FLPMA requirements: They are isolated and difficult to manage.*

*The potential disposal lands have diverse plant and animal communities, mineral character, and terrain. They would require extensive inventory and analysis prior to any exchange or sale. Any other land exchanges or disposals would require a planning amendment.*

#### Acquisitions

*Certain lands have been identified for potential acquisition (Figures 2-14 and 2-22). If acquired, these lands would benefit the management of pub-*

*lic domain through facilitating access; maintaining or enhancing public uses or values, maintaining or enhancing local social or economic values, or facilitating implementation of other aspects of this Resource Management Plan.*

*These lands are also very diverse and would require extensive inventory and analysis prior to an acquisition.*

### AIR RESOURCES

The BCRA is contained within the Uinta Basin air basin, an air basin defined as "a region within which air movement tends to be confined by topographical barriers, meteorology, and local circulation". Upper winds are generally westerly to southwesterly. Surface winds are strongly influenced by the complexity of the terrain. In the more central part of the Basin, east to southeast winds dominate as a result of nighttime and early morning drainage flow down the White River. The second most common wind flow pattern occurs from the southwest to west as a result of both daytime upslope winds and channeling of the regional westerly flow. In the southern portion of the Basin, in more complex and elevated terrain, nighttime and early morning downslope winds generally occur toward the north and northwest with daytime upslope flow toward the south and southeast. The basin areas are subject to prolonged and intense inversions which occur in both winter and early mornings in the summer. The inversions are most severe in the winter due to lower mixing heights which may reach only from 3,000 to 4,000 feet above ground associated with generally lighter winds. The strong, prolonged inversions hold pollution emissions, creating a buildup of concentrations until the inversion dissipates or is forced out by other meteorological conditions. Mixing heights would be expected to be higher in the more rugged terrain and lower in the more sheltered lower valley locations.

Air quality is presently considered good to excellent as a reflection of the remoteness of the area from major pollutant sources. The work of Aerocomp (1983) shows that concentrations of health related criteria pollutants (sulfur dioxide, nitrogen oxides, carbon monoxide, lead) are presently well within the National Ambient Air Quality Standards (NAAQS). Concentrations close to the ozone standard have been measured at White River Shale Oil's tracts U-a and U-b, but appear to be the result of long range transport phenomena rather than a nearby source. The current emission inventory provided by the State of Utah clearly demonstrates that unimproved roads are the predominant source of particulate emissions within the area, as well as nearby cities and towns, and appear to be the most significant source of higher total suspended particulate (TSP) levels. Naturally occurring, blowing dust probably causes or contributes to occasional high TSP



# SOIL TYPES

Figure 3 - 18

1. Empedrado-Coberly-Cathedral
2. Rock Outcrop-Travessilla-Winona
3. Mivida-Montwel-Nakai
4. Haverdad-Clapper-Uffens
5. Badland-Demant-Montwel
6. Badland-Demant-Tipperary
7. Penistaja-Abra-Begay
8. Walknolls-Badland-Rock Outcrop
9. Motto-Casmos-Walknolls
10. Atchee-Nelman-Lanver
11. Walknolls-Badland-Casmos
12. Atchee-Haverdad-Rock Outcrop
13. Castner-Winteridge-Towave
14. Castner-Towave-Veatch
15. Tosca-Seeprid-Utso

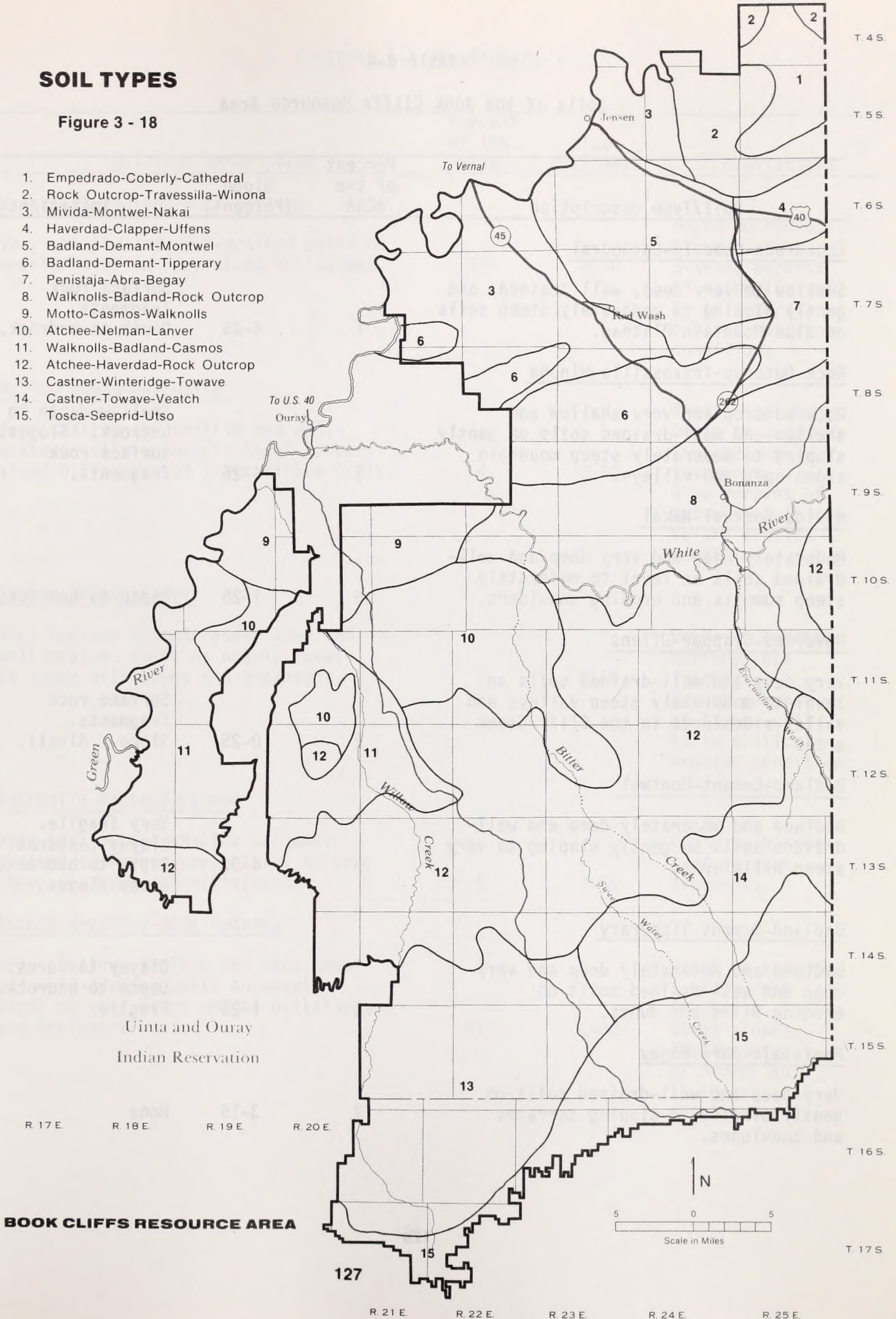




Table 3-4

## Soils of the Book Cliffs Resource Area

Soil/Type Description	Percent of the BCRA	Slope (Percent)	Limitations
<u>Empedrado-Coberly-Cathedral</u>			
Shallow to very deep, well drained, and gently sloping to moderately steep soils on Blue Mountain Plateau.	1	4-25	Surface rock fragments. Depth to bedrock.
<u>Rock Outcrop-Travessilla-Winona</u>			
Rock outcrop and very shallow and shallow and well-drained soils on gently sloping to moderately steep mountain sideslopes and valleys.	3	4-25	Shallow depth to bedrock. Slopes. Surface rock fragments.
<u>Mivida-Montwel-Nakai</u>			
Moderately deep and very deep and well-drained soils on level to moderately steep summits and eroding shoulders.	6	1-25	Depth to bedrock.
<u>Haverdad-Clapper-Uffens</u>			
Very deep and well-drained soils on level to moderately steep valleys and valley sideslopes in the Cliff Creek area.	2	0-25	Surface rock fragments. Slope. Alkali.
<u>Badland-Demant-Montwel</u>			
Badland and moderately deep and well-drained soils on gently sloping to very steep hillslopes.	5	4-90	Very fragile. Clayey textures. Depth to bedrock. Steep slopes.
<u>Badland-Demant-Tipperary</u>			
Badland and moderately deep and very deep and well-drained soils on eroding hills and dunes.	6	1-25	Clayey textures. Depth to bedrock. Fragile.
<u>Penistaja-Abra-Begay</u>			
Very deep and well-drained soils on gently sloping to sloping terraces and toeslopes.	2	3-15	None



Table 3-4 (Continued)

Soil/Type Description	Percent of the BCRA	Slope (Percent)	Limitations
<u>Walknolls-Badland-Rock Outcrop</u>			
Very shallow and well-drained soils on nearly level to very steep hillslopes.	11	2-90	Depth to bedrock. Slope. Sixteen percent of Walknolls soil is in severe or critical erosion condition.
<u>Motto-Casmos-Walknolls</u>			
Very shallow and shallow and well-drained soils on nearly level to very steep hillslopes of lower Willow Creek.	4	2-50	Excess sodium. Depth to bedrock. Surface rock fragments. Nine percent of Motto soil is in severe erosion condition.
<u>Atchee-Nelman-Lanver</u>			
Very shallow to moderately deep and well-drained soils on nearly level to steep hillslopes and drainages.	7	2-50	Depth to bedrock. Surface rock fragments. Twenty percent of Atchee soil is in critical erosion condition.
<u>Walknolls-Badland-Casmos</u>			
Very shallow and shallow and well-drained soils on nearly level to very steep plateaus and hillslopes.	8	2-50	Depth to bedrock. Surface rock fragments.
<u>Atchee-Haverdad-Rock Outcrop</u>			
Very shallow, shallow and very deep and well-drained soils on nearly level to very steep upland hillslopes and drainages.	21	2-80	Depth to bedrock. Surface rock fragments. Steep slopes. Twenty percent of Atchee soil is in critical erosion condition.



Table 3-4 (Continued)

Soil/Type Description	Percent of the BCRA	Slope (Percent)	Limitations
<u>Castner-Winteridge-Towave</u>			
Shallow, very shallow and very deep, and well-drained soils on plateaus, summits, and hillslopes.	8	1-70	Slope. Depth to bedrock.
<u>Castner-Towave-Veatch</u>			
Very shallow to very deep, and well-drained soils on sloping to very steep plateaus, shoulders, and backslopes.	7	8-80	Slope. Depth to bedrock.
<u>Tosca-Seeprid-Utso</u>			
Deep and well-drained soils on gently sloping to very steep plateau summits and hillslopes.	9	4-80	Slope. Coarse fragments. Depth to bedrock.

Source: Soil Descriptions and Interpretations of Portions of Grand and Uintah Counties, Utah and Garfield and Moffat Counties, Colorado. Soil Conservation Service, Bureau of Land Management, Utah Agricultural Experiment Station. 1982.



## CHAP. 3 — AFFECTED ENVIRONMENT

levels but not the pervasive long-term levels monitored in the towns.

The air quality classification of the BCRA is presently Class II under the Prevention of Significant Deterioration (PSD) regulations. There are several Class II areas of special concern in close proximity to the BCRA which might be affected by air pollution transport from the BCRA including the Uintah and Ouray Indian Reservation, Dinosaur National Monument, and the Colorado National Monument. The Colorado National Monument and the Colorado portion of Dinosaur National Monument are Colorado Category I areas.

### CULTURAL RESOURCES

Approximately 700 archaeological and historical sites have been recorded in the BCRA. These probably represent less than one percent of the potential number.

The recorded sites represent a fairly continuous human occupation of this area for the past 10,000 years. Cultural materials of the Paleo-Indian period (6,000 to 10,000 BC), the Archaic stage hunter-gatherers (ca. 6,000 BC-AD 350), the Fremont horticulturalists (ca. AD 950-1200), and the Protohistoric Ute and Shoshoni people have been discovered. The activities of Euro-American trappers, traders, explorers, miners, and homesteaders have also left their traces on the land.

Archaeological inventories indicate that certain environments were preferred for occupation and use by the American Indian. Other environments do not appear to contain archaeological remains. This information has been used to formulate theoretical statements concerning where common types of archaeological sites can usually be found. This has enabled BLM management to protect valuable cultural resource sites and areas while avoiding undue delay in development or use of natural resources.

A recent cultural resource study in the 648 square miles of the BCRA south of the White River revealed that prehistoric sites other than petroglyphs were present in the Utah juniper community and absent from the big sagebrush, pinyon-Utah juniper-Douglas fir-aspen, greasewood, and salt-desert scrub communities. Petroglyphs were most often found in the greasewood and big sagebrush communities. Historic sites were most often found in the greasewood, Utah juniper, and salt-desert scrub communities (Reynolds et al. 1983).

The following types of prehistoric archaeological sites are known in the BCRA:

1. Villages
2. Camps (several subtypes)
3. Resource procurement sites (numerous subtypes)

4. Lithic (stone) tool procurement and processing sites
5. Burials (several subtypes)
6. Rock alignments, stone cairns, rock circles
7. Caches, storage cists, structures
8. Bed rock mortars
9. Hearths (camp fires), ovens (several subtypes)
10. Petroglyphs, pictographs, signatures, scratchings
11. Fremont structural sites
12. Archaeoastronomy sites
13. Unknown function, cultural affiliation sites

The Cockleburrr Wash Petroglyph Site is the only prehistoric site presently listed on the National Register of Historic Places. Three historic sites in the BCRA are listed or considered eligible for inclusion on the National Register of Historic Places. The Ignacio stage stop (destroyed), the White River ferry crossing, and the Uintah Dragon toll road.

Several other historic period sites (1776 to present) are considered significant under the criteria for inclusion on the National Register of Historic Places (36 CFR 800). These are:

1. Dragon, Utah-Private ownership
2. Watson, Utah-Private ownership
3. Rainbow, Utah-Private ownership
4. Gilsonite Railroad-Mixed ownership

Another ten sites have been determined to have potential for inclusion on the National Register of Historic Places according to criteria listed in 36 CFR 800. These include an excavated cave, a well-preserved homestead, and an early 20th Century oil shale plant. Approximately 27 percent of the cultural sites in the BCRA have been termed significant; 5 percent of the total number of sites appear to have the potential for National Register listing (Phillips 1984).

The following types of historic period sites are known in the BCRA:

1. Civilian Conservation Corps reservoirs, dams, structures
2. Cabins and out structures
3. Dams
4. Wagon roads and way stations
5. Ferries
6. Corrals and enclosures



## CHAP. 3 — AFFECTED ENVIRONMENT

7. Excavations and structures associated with gilsonite mining
8. Prospect holes associated with mining and exploration for gilsonite and shale oil
9. Cemeteries and graves
10. Right-of-way structures, excavations, artifacts associated with the "Gilsonite Railroad"
11. Supporting services structures associated with the "Gilsonite Railroad"
12. Sites, artifacts associated with sheep and cattle ranching
13. Ute rock art sites: Uncompahgre reservation period
14. Ute dwellings and resource acquisition/processing activities
15. Euro-American rock art sites
16. Modern (1930-present) recreation sites
17. Unknown function/ethnic affiliation sites

The archaeological sites associated with human activities during the historic period appear to be oriented toward historical themes. These are:

1. Architecture
2. Civilian Conservation Corps/work project
3. Commerce/industry
  - a. Gilsonite/oil shale mining
4. Engineering
5. Ethnicity
6. Farming/ranching
7. Military/Indian conflict
8. Native American
9. Recreation
10. Transportation: Railroad/stage/ferry
11. Waterworks

Most sites in the BCRA are in fair to good condition (greater than 50 percent of their contents undisturbed). Erosion and vandalism are the two most common disturbing factors, followed by excavation/collection (Phillips 1984).

### PALEONTOLOGY

"Highly significant fossils are found in many places throughout the Vernal District. Some world-known localities, as well as some North American mammal-age type localities are found in the Vernal District" (Robinson 1978).

Numerous paleontological finds and sites have been discovered by archaeologists and/or paleontologists while performing work on lands administered by the BLM. These finds are usually connected to clearances for energy development and BLM range projects.

There are at least 20 geologic formations present in the BCRA. They range in time from the quarternary pleistocene to Pennsylvannian period formations. A large variety of environments provided habitats for diverse populations of aquatic/terrestrial plants and animals. Two formations, the Uinta and Green River, comprise two-thirds of the area of the planning units. Quaternary period deposits dominate the river-tributary systems while the remaining 17 are folded into the mountainous northeastern portion of the planning unit.

The known fossil assemblage in the Uinta Basin has enabled paleontologists to construct a reasonably accurate history . . . covering a several million-year span including evolutionary changes, climatic regimes, and appearance and extinction of life forms. For example, the earliest record of camels and ducks comes from the Uinta Basin. The Cenozoic era (the last 65 million years) has been divided into the shortest recognizable time intervals on the basis of fossil mammals. Two of these time intervals for North America, the Uintan and Duchesnean, are based on fossil mammals from the Uinta Basin.

The Duchesne River formation lies below the surface alluvium. Fossils are rare and not commonly encountered in this formation. However, when encountered, they are likely to be highly important because of their rarity (BLM 1982).

A variety of reports on this area have been completed. A complete list may be obtained by request from the Vernal District.

### SOCIOECONOMICS

The format for this section includes an overview of the affected area, followed by a more detailed discussion of the significant economic considerations that pertain to the planning issues. The methodologies and computations that were used for the affected environment are discussed in Appendix 12 (Methodology for the Economic and Social Analysis).

#### Economic Conditions

This section focuses on Uintah and Duchesne counties in Utah and the communities of Dinosaur and Rangely in Colorado.

Statistics show that mining (mineral development) is the most important private industry in Uintah county. Growth in this industry was primarily responsible for the county's 62 percent population increase between 1970



## CHAP. 3 — AFFECTED ENVIRONMENT

and 1980. Mining directly accounts for nearly 23 percent of the employment and 36 percent of the income in the county (see Table 3-5, Personal Income and Employment — Uintah and Duchesne Counties, 1981). Other sectors, which contribute to employment and support of the local economy include: the Federal government which accounts for five percent; manufacturing, which accounts for two percent; agriculture, which accounts for six percent; tourism, accounts for all undefined parts of the total county employment.

The 1980 Uintah County population was 20,506 (Tables 3-6, Summary of Regional Infrastructure Conditions and 3-7, Baseline and Interrelated Population Growth). About 31 percent of the county's population live in Vernal (1980 population of 6,600), which serves as the regions retail and service center.

Duchesne County has a similar economic base to that of Uintah County, however, it is more dependent on mining (Table 3-5). Growth in the petroleum industry was primarily responsible for the county's 72 percent population increase between 1970 and 1980. Thirty percent of the employment and nearly 44 percent of the income is directly attributable to mining. Duchesne County also has a small manufacturing sector (four percent of employment) and Federal government sector (seven percent of employment). Another sector which generates local employment is agriculture (12 percent of local employment). Tourism accounts for all of the undefined parts of county employment.

The 1980 Duchesne County population was 12,565. Duchesne (1980 population of 1,677), Myton (1980 population of 500), and Roosevelt (1980 population of 3,842) are the largest communities in the county (USDC 1981).

The town of Rangely, Colorado, (1980 population of 2,615) is located 20 road miles east of the resource area (USDC 1981). The community's economic base is primarily energy related. Growth of this base industry has resulted in a 33 percent population growth between 1970 and 1980.

The town of Dinosaur (1980 population of 410) is located 3 miles east of the BCRA (USDC 1981). The community's economic base is primarily agricultural and energy-related. Because of it's location directly south of Dinosaur National Monument and on U.S. Highway 40, tourism also plays a part in it's economy.

Summary data on the region's existing infrastructure conditions are contained in Table 3-6. Generally, the area is upgrading its infrastructure to meet the needs of existing and projected baseline populations.

A housing shortage in Uintah County was indicated by low vacancy rates and higher than average housing prices in 1980 and 1981. By 1983, this housing shortage was alleviated through continued housing construc-

tion and a slump in the oil and gas industry. Housing shortages have also been serious in the town of Rangely because public land surrounding the city has limited expansion and has resulted in inflated land prices which, in turn, has discouraged new housing construction.

Many of the schools in Uintah County have been operating over capacity. Three schools have been operating at 150 percent over capacity, and one school at 256 percent over capacity. To help alleviate the problem, two new elementary schools were opened in 1983. A new high school is under construction in Vernal and will be completed in 1986.

Both Duchesne and Uintah Counties have existing shortages of medical personnel, particularly for mental health care. They also have deficient jail space. Uintah's jail does not comply with Federal and State standards; however, a new expansion project should be completed during 1984.

Vernal and the surrounding area's water system is operating at 50 percent over capacity. Two new water systems are presently being developed. The sewer system is also operating over capacity; however, a new system with a 40,000 person capacity is now being installed. The town of Dinosaur has begun construction on a central sewer system designed for a 2,000 person capacity.

In general, the counties and communities in the area have been able to handle the added expenditures necessitated by growth in the 1970s and have adequate debt available to handle additional fiscal burdens (Table 3-8, Summary of Fiscal Conditions for Affected Counties and Communities).

Fifteen percent of Uintah County and eighteen percent of Duchesne County is Uintah and Ouray Indian Reservation land (USDA 1983). The reservation has a checkerboard land ownership distribution over which the tribal committee has jurisdiction as a politically distinct unit. Approximately 4,100 American Indians reside in Duchesne and Uintah county (USDA 1983). Only an estimated 50 percent of the tribe's potential work force is employed (Utah 1983). Few Indians are employed in energy-related developments. Lack of employment opportunities has led to outmigration.

There is an existing housing shortage on the reservation and many existing housing units are in deficient condition. The tribe's water system distributes water to a number of non-Indian communities including Ft. Duchesne, Myton, and Ballard. Demands on the system already exceed its present capacity.

The reservation also has it's own police force and health care facilities.

The Ute Tribe's largest sources of revenue are bonus, lease, and oil and gas royalty monies. Grants



Table 3-5

Personal Income and Employment  
 Uintah and Duchesne Counties 1981  
 (By Place of Work)

	UINTAH COUNTY		DUCESNE COUNTY	
	Earnings (Percent)	Employment (Percent)	Earnings (Percent)	Employment (Percent)
Agriculture	2	2	3	3
TOTAL AGRICULTURAL	2	2	3	3
Mining (Mineral Developments)	36	23	44	30
Construction	4	4	5	4
Manufacturing	1	2	5	4
Transportation and Public Utilities	10	7	7	5
Wholesale Trade	5	4	6	6
Retail Trade	8	13	7	14
Finance, Insurance, and Real Estate	2	2	2	2
Services	23	27	7	7
Other	-	-	-	-
<u>Total Private Industry</u>	89	83	82	72
Federal Government	3	5	4	7
State and Local Government	6	11	10	18
<u>Total Government</u>	9	16	14	25
TOTAL NONAGRICULTURAL	98	98	97	97
Unemployment (Fourth Quarter, 1983)		7.8		8.0
	(Dollars)	(Job)	(Dollars)	(Jobs)
Total Employment and Earnings	\$148,435,000	10,238	\$ 88,355,000	6,069
Total Personal Income (By Place of Residence)	\$195,717,000		\$106,001,000	
Per Capita Personal Income	\$ 9,058		\$ 8,520	

Note: Because of rounding, numbers are not additive.  
 Total and percentage income figures include wage, salary, and proprietors' income. Total employment figures include wage, salary, and proprietors' employment, whereas the employment percentage figures include only wage and salary employment. The relative importance of farm employment is, therefore, underrated.

Sources: USDC 1983; UDES, 1984.



Table 3-6

## Summary of Regional Infrastructure Conditions

Socioeconomic Development Category	Duchesne County	Uintah County	Community of Rangely	Community of Dinosaur
Population (1980)	12,565	20,506	2,615	410
Infrastructure				
Housing				
Single family	2,622	4,893	492	83
Multi-family	142	253	85	0
Mobile homes	1,116	1,261	240	325
Hotel	249	574	100	33
Education				
Students	4,247	6,478	511	108
Present capacity	4,886	6,143	980	175
Teachers	185	223	N/A	N/A
Health Care				
Hospital beds				
General & long term	32	36	28	9
Medical personnel				
Doctors	N/A	11	3	9
Dentists	N/A	10	1	9
Nurses	N/A	N/A	10	9
Medical health care Personnel	5	N/A	N/A	9
Public Safety				
Law Enforcement				
Police officers	22	39	2	1
Patrol cars	8	21	5	2
Jail space (units)	36	27	N/A	N/A
Juvenile holding cells	0	N/A	N/A	N/A
Emergency Medical Services				
Ambulances	N/A	2	2	9
Emergency medical technicians	51	35	11	9
Utility Service Demands				
Water System				
Connections	1,789	6,215	714	N/A
Supply (10 <sup>6</sup> gallons/year)	2,263	3,723	658	N/A
Storage (10 <sup>6</sup> gallons/year)	1,789	1,205	365	.4
Sewage System (10 <sup>6</sup> gallons/year)	803	986	732	N/A
Solid Waste Acres/year	2.8	4.4	.7	NA

Source: Utah 1983; Argonne 1983

N/A: Not Available

Dinosaur's health care needs are catered by Rangely.



Table 3-7

## Baseline and Interrelated Population Growth

	1980	1985		1990		1995		2000	
		Base	Other	Base	Other	Base	Other	Base	Other
Duchesne	12,565	17,778	4,965	18,632	9,542	18,684	12,333	18,292	14,910
Roosevelt CCD	9,714	13,695	4,897	15,057	9,404	15,005	12,190	14,636	14,701
Roosevelt	3,842	5,416	3,428	5,995	6,582	5,934	8,533	5,789	10,291
Myton	500	705	171	775	329	773	427	754	515
Unincorp. Area	5,372	7,574	1,298	8,287	2,493	8,298	3,230	8,093	3,895
Duchesne & So. & No.									
Duchesne CCD <sup>2</sup>	2,851	4,083	68	3,575	138	3,679	143	3,656	209
Uintah	20,506	25,730	18,940	29,326	34,690	29,863	44,174	28,985	52,445
Uintah-Ouray									
CCD	4,338	5,061	445	5,699	830	5,730	926	5,565	1,027
Ballard	558	775	223	966	416	976	464	926	514
Unincorp. Area	3,780	4,286	222	4,733	414	4,754	462	4,639	513
Vernal CCD	16,168	20,653	13,858	23,611	32,011	24,117	43,041	23,404	51,209
Vernal	6,600	9,291	6,165	11,065	13,918	11,369	18,786	10,941	22,328
Unincorp. Area	9,568	11,362	12,330	12,546	19,942	12,748	24,462	12,463	29,090
Bonanza <sup>1</sup>		16	4,637	16	1,849	16	207	16	209
Moffat-Rio Blanco		24,255	1,176	28,345	3,004	27,646	3,837	28,144	4,518
Dinosaur	410	501	517	405	1,367	425	1,744	437	2,055
Rangely	2,614	3,193	659	3,993	1,637	3,805	2,093	3,962	2,463
Grand	8,241	9,850	691	10,570	834	10,324	915	9,676	919
Thompson CCD	326	380	691	366	834	366	915	365	919
Moab CCD	7,915	9,470	-	10,204	-	9,958	-	9,311	-
Daggett Co., Utah & Mesa Co., Colo.			1,510		1,198		1,731		2,185

Note: Daggett County, Utah and Mesa County, Colorado are not within the affected area as the term is used in the text.

<sup>1</sup>Bonanza does not correspond with any official census area, but is roughly the area delineated by the BCRA.

<sup>2</sup>CCD = County Census Division



Table 3-8

Summary of Fiscal Conditions for  
Affected Counties and Communities

	Average Annual Revenues (Thousands)	Average Annual Expenditures (Thousands)
Duchesne County	4,874	4,209
Duchesne	423	343
Roosevelt	2,355	2,175
Uintah County	17,787	14,905
Ballard	68	68
Naples	653	652
Vernal	4,604	4,660
Dinosaur	143	80
Rangely	1,293	1,351

Source: State 1983

Table 3-9

Uintah County's 1982 Mining Employment Breakdown  
(By Place of Employment)

	Average Employment	Percent
Oil and Gas Production and Field Services	1,460	71
Oil Shale	160	8
Tar Sands	0-10	a
Gilsonite	160	8
Sand and Gravel	20-49	1-2
Metal Mining	0-10	a
Miscellaneous	203-252	10-12
Total	2,052	100

Source: USES 1983; Haslem 1983; Carlburt 1983; Godlove 1983; Geokinetics 1983.

<sup>a</sup>Less than 1 percent



## CHAP. 3 — AFFECTED ENVIRONMENT

and contracts are the second largest source of revenues. Because the tribe cannot levy property taxes, energy developments which take place outside the reservation increase infrastructure-related costs and do not increase tribal revenues.

A number of other businesses depend on the mining industries to purchase their services and products, and many retail and service businesses depend on the workers to spend locally. The mining sector is comprised of oil and gas exploration, production, and field services, phosphate mining, gilsonite mining, oil shale development, and sand and gravel extraction. Employment by activity is identified in Table 3-9 (Uintah County's 1982 Mining Employment Breakdown).

Employment in the oil and gas sector is highly variable. Since 1980, the area has experienced both a minor "boom" and a minor "bust" in exploration work. The Vernal area has been somewhat cushioned from these "boom/bust" cycles because it has become the center for oil and gas field service companies which are a more stable source of employment.

Two companies are active in the shale oil business and there is one small tar sand operation in the area which employs less than 10 people.

Local units of government receive property tax revenues from mining equipment, mining facilities, and sales and property tax revenues from employees directly employed in the mining industry. Only Uintah County receives property tax revenues from mining equipment and facilities which are located within the BCRA.

Of the 39 livestock operations using BCRA forage, 21 are cattle operations and 18 are sheep operations. Fifty-three percent of these operators live in Uintah County, 5 percent in Duchesne County, and another 38 percent live in western Colorado.

Livestock operators have been grouped by herd size Table 3-10 (Livestock Operations by Herd Size). Based on the average budgets of the varying operators, most operators should be able to cover their long-term costs. However, many ranching operations differ in degree of indebtedness, operating cost, and size of operations, suggesting that some operators may not be able to meet long-term or cash costs. The returns to smaller operators have generally been too small to be the sole source of their income; few operators have earned a fair market return for their investments and land through their farm income. However, escalating farm real estate values between 1970 and 1981 have been contributing to fair market returns (Hughes 1983; Duncan 1983). Aggregate ranch budget statistics are summarized in Table 3-11 (Aggregate Costs and Returns for Operators Who Use Book Cliffs Resource Area Forage).

Grazing fees represent a minimum value for public forage; however, the grazing fee is not determined

through the market and is generally accepted as lower than its true economic value (USDA, USDI 1977). Although the forage quality, season of use, and added services make comparisons between BLM forage and privately leased forage questionable, private lease rates still provide one of the best measures of value. Utah's private lease rate averaged \$7.24 per AUM in 1982 (USDA 1983). There are a number of other indications that the value of public forage in the BCRA is close to the \$7.24 per AUM figure (Gee 1981; USFS 1980). Using the \$7.24 figure, the estimated annual value of livestock forage provided by the BCRA is \$484,935.

Although BLM does not recognize a capitalized value for grazing preferences, the market does recognize a capitalized value whenever grazing fees are lower than their true economic value (Gardner 1962). If a permit's value averages \$60 per AUM, and the entire permit value is capitalized in the ranch's value, then grazing privileges in the BCRA account for \$6,174,900 or 20 percent of the aggregate ranch value of operators using BCRA forage. Since grazing privileges can affect both base property values and rancher income, changes in grazing privileges could also affect ranchers ability to obtain loans.

Recreation activities within the BCRA include hunting, fishing, river floating, dispersed ORV use, camping, sightseeing, and Christmas tree cutting. In 1982, there were 7,200 recreation days spent in the resource area (excluding hunting days), which generated \$324,000 in expenditures. Hunters contribute to the local economy through their hunting-related expenditures. In 1982, big game hunting amounted to approximately 6,770 hunter days and accounted for \$304,650 in expenditures.

### Social Conditions

The area was largely settled by "Mormon" colonizers, most of whom had small land holdings. They formed small, mostly rural villages which, because of their common religious beliefs, were close-knit communities.

A dominant emphasis in these communities included personal independence, local government and belief in progress and the development of natural resources (Centaur 1979). Although not as dominant today, many of these cultural values still hold true.

Energy-related development has brought significant growth to the Uintah Basin. As a result, traditional farming and ranching communities have lost some of their cultural identity (Utah 1983). Political, social, and economic diversity have increased. Energy-related developments have created jobs, brought new people to the area, and have created a diverse retail and service sector. Growth has forced the area to establish outside linkages with State and Federal agencies and has shown the regional ability to coordinate its efforts in response to impending problems.



Table 3-10

## Livestock Operations By Herd Size

<u>Livestock Operators</u>	<u>1-99 Cows</u>	<u>100+ Cows</u>	<u>100+ Cows Yearlong</u>	<u>Sheep All</u>
Number of Operators	10	1	10	18
Average Herd Size	52	201	847	2,780
Aggregate Herd	520	201	8,470	50,040

Table 3-11

Aggregate Costs and Returns for  
Operators Who Use Book Cliffs Resource Area Forage

	<u>Cattle</u>	<u>Sheep</u>	<u>Total</u>
Gross Revenues	\$2,415,282	\$3,585,258	\$6,000,540
Cash Cost	1,441,458	1,509,804	2,951,262
Returns Above Cash Cost	973,824	2,075,454	3,049,278
Returns to Family Labor and Investment	526,204	1,719,522	2,245,726

Source: Gee 1981.



## CHAP. 3 — AFFECTED ENVIRONMENT

Many residents feel that the improvements in living conditions outweigh the problems associated with rapid growth. Residents are aware, although skeptical, of potential oil shale and tar sand developments. Attitudes towards mineral developments are even more cautious among local Ute Indian Tribal members.

Most tribal members are aware of possible energy developments and are concerned over possible cultural and environmental impacts. Preserving the primitive character of the Hill Creek Extension is a particular environmental concern of most tribal members (Duncan 1983b).

Social conditions of the local American Indian population differ from the local non-Indians. The Uintah and Ouray Indian Reservation is governed by an elected business committee which has sovereign power over tribal lands. The income and living condition disparity between Indian and non-Indians has not improved with energy developments.

Cooperation and rapport between livestock operators and BLM appears to be good. Wildlife-livestock conflicts are recognized in the Blue Mountain area and mineral-livestock conflicts are recognized throughout the BCRA. In both cases, there is the belief that many of these conflicts can be resolved through range improvements.

### TRANSPORTATION

Four major roads carry the majority of traffic through the BCRA. These are U.S. 40, Utah 88, Utah 45, and County Road 262 (Figure 1-1). Dirt roads provide access to much of the Resource Area.

If traffic volumes increase, the level of service on U.S. 40 and between Utah 88 and Vernal, and Vernal and Jensen, would be unsatisfactory Table 3-12 (Projected 1985 Baseline Average Daily Traffic Levels). All other road segments would remain at a satisfactory level (UBS 1983). If the segment of U.S. 40 between Vernal and Jensen is upgraded in 1984 as planned, then it's condition would improve to a satisfactory level.



Table 3-12

## Projected 1985 Baseline Average Daily Traffic Levels

Highway Segment	Baseline
<u>Utah 88</u>	
From Ouray to U.S. 40	391
<u>U.S. 40</u>	
From Utah 88 to Vernal	3,955
From Vernal to Jensen 5,356	
From Jensen to County 262	2,348
From County 262 to Colo. Line	1,975
<u>County 262</u>	
From Utah 45 to U.S. 40	323
<u>Utah 45</u>	
From Vernal to County 262	N/A

Source: Uintah Basin Synfuels Development Final EIS

NA = Not Available

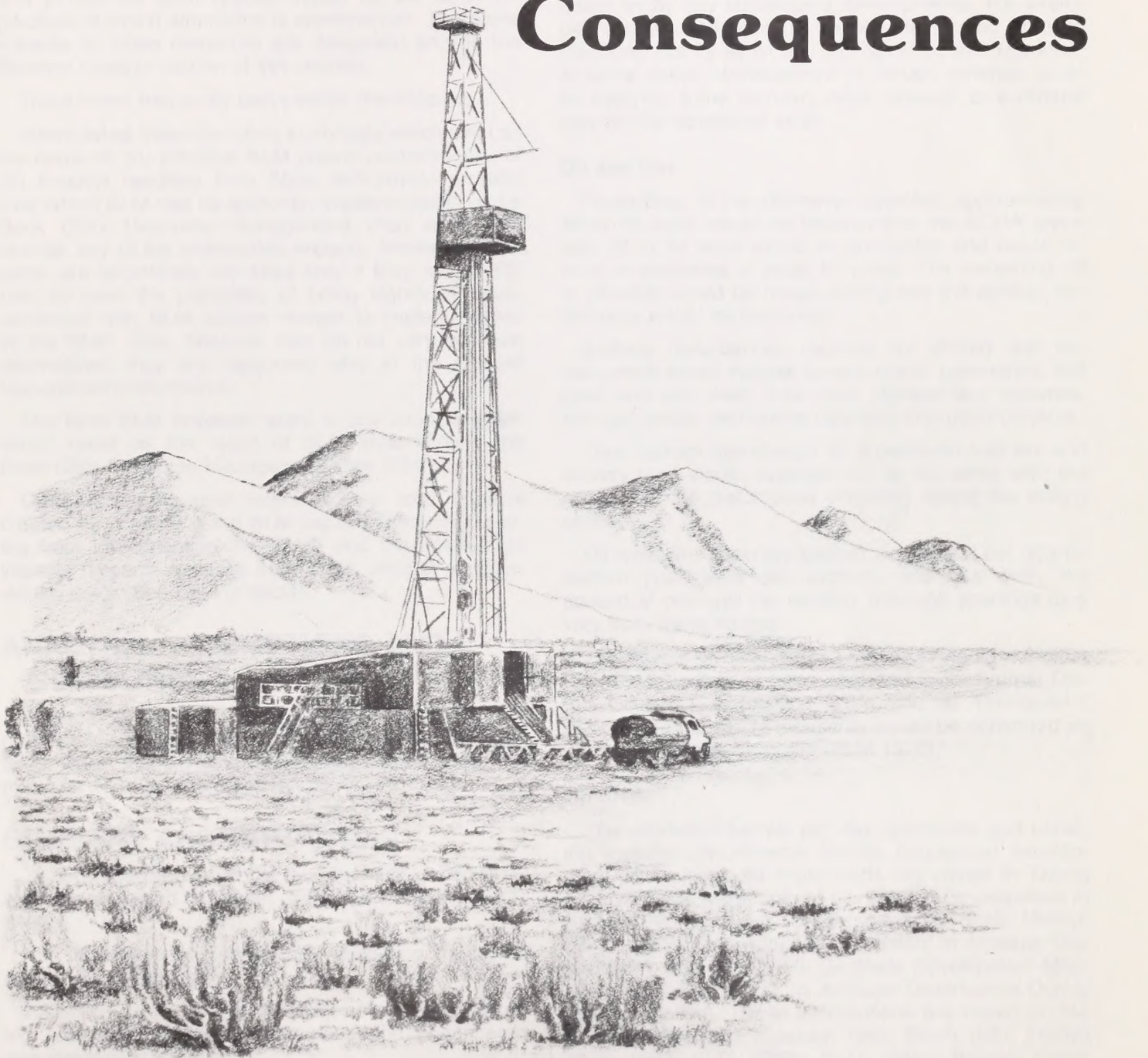






# Chapter 4

## Environmental Consequences









# CHAPTER 4

## ENVIRONMENTAL CONSEQUENCES

### INTRODUCTION

This chapter discusses the environmental consequences (impacts) of implementing the alternatives to form a Resource Management Plan (RMP). The impacts are discussed, by alternative, at a level commensurate with the degree or severity of impact. Laws regulating impacts to cultural resources and endangered and threatened plant species would be the same regardless of which alternative is implemented. Therefore, impacts to these resources are discussed only in the General Impacts section of this chapter.

Three terms frequently occur within this chapter:

**Interrelated impacts** refers to impacts which exist as the result of: (A) previous BLM project commitments, or (B) impacts resulting from State and private projects over which BLM has no authority. Implementation of the Book Cliffs Resource Management Plan would not change any of the interrelated impacts. Interrelated impacts are specifically identified only if they are significant or have the possibility of being significant when combined with BLM actions related to implementation of the RMP. Also, because they do not vary between alternatives, they are discussed only in the Current Management Alternative.

The term **BLM impacts** refers to any impacts which would occur as the result of BLM implementing the Book Cliffs Resource Management Plan (RMP).

**Cumulative impacts** refers to the total impacts created by combining the BLM impacts (impacts resulting from implementing the RMP) and the interrelated impacts (impacts resulting from State, private, and previously committed BLM projects).

### ANALYSIS ASSUMPTIONS AND GUIDELINES

For the purpose of analyzing the impacts of implementation of each alternative, the following assumptions were made. Note that assumptions were not made for all of the identified issues.

### GENERAL ASSUMPTIONS

To facilitate preparation of this final EIS, landownership was assumed to remain unchanged from August 1, 1983.

The management actions and mitigating measures would be implemented.

All actions would conform with existing laws, including protection of cultural resources and endangered and threatened species.

Management actions would only involve public lands except where exchange-of-use agreements exist with

non-Federal land owners.

The White River Dam will be built.

### Minerals Assumptions

Generally, multiple mineral developments could occur in the same geographical area and could be compatible with each other, provided the initial development is mitigated for by any subsequent developments. For example, underground oil shale development could occur in the same vicinity as oil and gas development. However, in some cases, development of certain minerals could be delayed, some recovery rates reduced, or a mineral may not be developed at all.

### Oil and Gas

Regardless of the alternative selected, approximately 40 to 80 wells would be drilled within the BCRA annually; 28 to 56 wells would be producible and would remain in existence at least 10 years. The remaining 12 to 24 wells would be nonproducing and the surface disturbance would be reclaimed.

Surface disturbances required for drilling and development would include access roads, powerlines, drill pads and well sites, flow lines, storage tank batteries, storage ponds, distribution pipelines and other projects.

Total surface disturbance for a particular well site and access road would average four to six acres with the majority of the disturbance occurring during the drilling phase.

Oil wells are generally spaced at one well per quarter section (four wells per section), and gas wells are spaced at one well per section, although spacings may vary from these figures.

The effects of oil and gas production would not differ from those that have been analyzed in the Vernal District Oil and Gas Leasing Environmental Assessment. Appropriate mitigating measures would be continued as part of the leasing program (BLM 1976).

### Oil Shale

The estimated barrels per day operations and resulting acreage disturbances for the conceptual development within future oil shale tracts are shown in Tables 4-1 (Oil Shale Magnitude of Conceptual Development in Barrels Per Day), 4-2 (Underground Oil Shale Mining-Magnitude of Conceptual Development in Acreage Disturbance), and 4-3 (In Situ Oil Shale Development-Magnitude of Development in Acreage Disturbance During Full Production). These assumptions are based on the best available data (Cashion 1967, Smith 1981, Trudell et al. 1983, BLM 1982b, BLM 1983a, Bechtel Petroleum, Inc. 1981).

Although room-and-pillar mining methods are antici-



TABLE 4-1  
Oil Shale Magnitude of Conceptual  
Development in Barrels Per Day

COMMODITY PRODUCTION ALTERNATIVE											
Probable Mining Method	Total Area Available For Lease (Acres)	Total Reserves* (Millions of Barrels)		Potential Future Lease Tracts No.	Acres	Total (Millions)	Recovery (PCT)	Recoverable Barrels Within Tracts (Rich Zone Only)	Length of Mining Operation (Years)	Barrels Per Day (Thousands)	Barrels Per Day (Rounded)
		Mahogany Zone	Rich Zone								
Underground	84,000	12,000	8,000	3-4**	15,450-20,600	1,500-2,000	65	980-1,300	20	131-178	130-180
In Situ	14,000	1,500	780	0-1**	0-5,150	300	50	150	20	20.5	20
BALANCED USE ALTERNATIVE											
Underground	42,000	6,400	3,700	2-4**	10,300-20,600	900-1,800	65	600-1,200	20	82-164	80-160
In Situ	6,000	650	310	0-1**	0-5,150	270	50	135	20	18.5	20
RESOURCE PROTECTION ALTERNATIVE											
Underground Only	18,000	2,500	1,500	2	10,300	860	65	560	20	76.7	80

\*Kerogen

\*\*No more than 4 total tracts would be leased regardless of the mining method employed.



TABLE 4-2  
Underground Oil Shale Mining-Magnitude of Conceptual  
Development in Acreage Disturbance

Total Area Available for Lease	Total Area With Potential For Tract Delineation	Acreage Disturbance					Average Total Disturbance***		
		'Permanent'							
		Spent Shale Disposal	Annual Acres Disturbed* (1%)	Annual Acres Reclaimed** (.5%)	(Includes Plant and Mine Facilities, Storage Facilities, Retention Dams, etc.)		Other (Includes Rights-of-Way and Construction Camps)	Disturbed 8%	Rehabilitation 3%
					Acres Disturbed (One Time) (4%)	Acres Reclaimed (1%)			
COMMODITY PRODUCTION ALTERNATIVE									
84,000	15,450- 20,600 (3-4 tracts)	150-200	75-100	600-800	150-200	750-1,000	600-800	1,200- 1,600	500-600
BALANCED USE ALTERNATIVE									
42,000	10,300- 20,600 (2-4 tracts)	100-200	50-100	400-800	100-200	500-1,000	400-800	800- 1,600	300-600
RESOURCE PROTECTION ALTERNATIVE									
18,000	10,300 (0-2 tracts)	100	50	400	100	500	400	800	300

\*A 2% initial disturbance would occur.

\*\*Reclaimed refers to contoured and seeded areas. Three additional years would be required for adequate forage development. Disposal areas would be disturbed more rapidly than rehabilitation would occur for several years. Spent shale reclaimed areas would not be available for forage consumption through the life of the project.

\*\*\*Through a 10-year period at a given time.



TABLE 4-3  
In Situ Oil Shale Development-Magnitude of Development  
in Acreage Disturbance During Full Production\*

Total Available Acres	Total Potential Tract Acres	Project Life	'Permanent' Disturbances** (5%)	New Annual Disturbance (5%)	Area Undergoing Rehabilitation* (15%)	Total Of All Disturbances (25%)
COMMODITY PRODUCTION ALTERNATIVE						
14,000	0-5,150	20 years	0-250	0-250	0-750	0-1,250
BALANCED USE ALTERNATIVE						
6,000	0-5,150	20 years	0-250	0-250	0-750	0-1,250

\*In situ oil shale development is not considered likely in the areas that could be leased under the Resource Protection Alternative.

\*\*Includes plant site, storage facilities, etc.

\*\*\*Reseeded and fenced.



## CHAP. 4 — ENVIRONMENTAL CONSEQUENCES

pated, modified in situ methods could also be used. Shallow oil shale deposits would be developed by true in situ methods and would be similar in appearance and impacts to the ongoing Geokinetics oil shale project. A detailed description of the project is being prepared and should be available through the Division of Oil, Gas, and Mining, State of Utah.

Based upon current legislation, no off-site disposal of spent oil shale would be authorized.

### Tar Sand

Combined Hydrocarbon Lease Applications received prior to November 16, 1983 will be analyzed in separate environmental documents. Tracts leased competitively will also be analyzed in separate environmental documents.

The estimated barrels per day operations and estimated acreage disturbances for conceptual tar sand development in the PR Spring STSA are presented in Tables 4-4 (Tar Sands-Magnitude of Conceptual Development in Barrels Per Day, for the PR Spring STSA) and 4-5 (Tar Sands-Magnitude of Conceptual Development in Acreage Disturbance for the PR Spring STSA). These estimates differ slightly from the Utah Combined Hydrocarbon Regional Draft EIS, because of improved data. The following comments relate to those tables:

- All assumed tar sand developments were within the central and southern portion of the PR Spring STSA. The levels of development in PR Spring STSA are within the scope of development predicted in the Utah Combined Hydrocarbon EIS (BLM 1983f).
- Based upon a more recent, detailed evaluation of data, most tar sand deposits would likely be developed by an in situ, thermal combustion process because the depth of overburden is too great for economical surface mining (Hubbard 1983). The area suitable for surface mining of tar sand (strip ratio of 1:1 or less) is much smaller than was previously estimated in the Utah Combined Hydrocarbon Regional EIS (BLM 1983f). A thermal combustion process was assumed instead of a steam process for two reasons. The relatively thin overburden (less than 350 feet) is considered insufficient for a steam process, and the amount of water necessary for the steam process may not be readily available (BLM 1983f, Kruuskraa 1978).
- Within the limited areas where surface mining could be employed, development was assumed to be similar to a coal strip mine. Generally, after a unit area would be mined, it would be backfilled with the material from a subsequent mine unit. For example, a mined out unit would be backfilled with spent sand, overburden, and

covered with topsoil from the adjacent unit. This is a refinement of the prediction made within the Utah Combined Hydrocarbon Leasing EIS that surface mining would be open pit with little or no backfilling into the mine area.

- Development of the Hill Creek and Raven Ridge-Rim Rock TSAs was assumed to be consistent with the high level scenario of the Utah Combined Hydrocarbon Leasing EIS which predicted limited development.

### Gilsonite

Approximately one to five miles of currently unleached gilsonite veins would be leased and subsequently developed in the next 10 years. Mine staging areas, which include a head frame, haul house, access roads and storage areas would be laid out in intervals of 600 to 1,200 feet along a vein. Each staging area, including access roads, would disturb approximately three acres. Each staging area would remain in existence up to ten years.

### Sand and Gravel

Sand and gravel pits are usually granted in 40-acre parcels. Within these parcels, one to five acres may be used for equipment, set up, and stock piles, and one to two acres may be used for topsoil storage. The rest of the area could be available for mining. The length of activity could vary, but generally, the life of the pit would be one to two years with another one to two years required for reclamation. In some locations, small quantities of water may be required.

Conceptual disturbance from potential sand and gravel developments is shown in Table 4-6 (Sand and Gravel-Magnitude of Development in Acreage Disturbance).

### Right-of-Way Corridors Assumptions

Common oil and gas pipelines, roads related to oil and gas development, and roads related to large overhead powerlines, generally disturb a 30-foot wide area, although up to 100 feet could be disturbed by larger projects. This would result in 3 to 12 acres of disturbance per linear mile. In some instances, maintenance roads to powerlines could negate total reclamation.

### Forage Assumptions

1. Analysis of forage-related impacts is based on expectations of near normal annual climate conditions. Severe climate variations could drastically alter vegetation responses.
2. The proposed vegetation manipulations would be implemented over a 10-year period.



TABLE 4-4  
Tar Sand-Magnitude of Conceptual  
Development in Barrels Per Day  
for the PR Spring STSA

Assumed Development (Acres)	Total Recoverable Barrels* (Millions)	Probable Mining Method	Total Area With Potential for Development	Total Recoverable Barrels By Mining Type (Millions)	Amount of Resource Recovered (PCT)	Amount of Resource Recovered (Millions of Barrels)	Length of Mining Operations	Barrels Per Day Operations, All Developments	Barrels Per Day Rounded to Nearest 5,000	
COMMODITY PRODUCTION ALTERNATIVE										
89,000	700	In Situ	44,500-62,300	385-540	30-50	115-270	20 years	15,750-37,000	25,050-58,250	25,000-60,000
		Surface	8,900-17,800	75-155	90-100	68-155	20 years	9,300-21,250		
BALANCED USE ALTERNATIVE										
23,500	300	In Situ	11,750-16,450	165-230	30-50	50-115	20 years	6,850-15,750	12,700-25,750	15,000-25,000
		Surface	2,350-4,700	35-65	90-100	32-65	15 years	5,850-10,000		
RESOURCE PROTECTION ALTERNATIVE										
4,200	55	In Situ	2,100-2,940	30-42	30-50	9-21	10 years	2,450-5,750	5,200-12,350	5,000-10,000
		Surface	420-840	6-12	90-100	5-12	5 years	2,750-6,600		

\*All development was assumed to occur in the central and southern part of PR Spring STSA.



TABLE 4-5  
Tar Sand-Magnitude of Conceptual  
Development in Acreage Disturbance  
for the PR Spring STSA\*

Assumed Develop- ment (Acres)	Probable Mining Method	Assumed Development By Mining Type (PCT)	Assumed Development By Mining Type (Acres)	Assumed Project Life (PCT)	Storage Facilities, etc.) (PCT)	Annual Mining Disturbance (PCT)	Re- seeded and Fenced (PCT)	Area Under- going Rehabil- itation (Re- seeded Area in Disturbance (Waste and Tailings Piles) (PCT)	Total of All Disturb- ances (All Mining Methods) Rounded to Nearest 100 Acres	Total of All Disturb- ances (All Mining Methods) Rounded to Nearest 100 Acres
COMMODITY PRODUCTION ALTERNATIVE										
89,000	In Situ	50-70	44,500- 62,300	20 yrs.	5	5	15	0	25	11,125- 15,575
	Surface	10-20	8,900- 17,800	20 yrs.	5	5	15	0-15	25-40	13,400- 22,700
BALANCED USE ALTERNATIVE										
23,500	In Situ	50-70	11,750- 16,450	20 yrs.	5	5	15	0	25	2,950- 4,110
	Surface	10-20	2,350- 4,700	15 yrs.	5	7	20	0-20	32-52	3,800- 6,600
RESOURCE PROTECTION ALTERNATIVE										
4,200	In Situ	50-70	2,100- 2,950	10 yrs.	5	10	30	0	45	950- 1,330
	Surface	10-20	420- 840	5 yrs.	5	20	60	15	100	1,400- 2,200

\*All developments were assumed to occur in the central and southern portions of the PR Spring STSA.



TABLE 4-6  
Sand and Gravel-Magnitude of  
Conceptual Development in Acreage Disturbance

Total Area (Acres)	Anticipated Demand (acres) (Annual)	Rehabilitated Area (Percent) (10 Years)	Total Disturbance (Acres) (10 Years)	Total Disturbance* (Acres) (10 Years)
CURRENT MANAGEMENT ALTERNATIVE				
8,500	Unquantifiable	Unknown	Unknown	Unknown
RESOURCE PROTECTION ALTERNATIVE				
0	10-15	100-150	N/A**	N/A*
COMMODITY PRODUCTION ALTERNATIVE				
12,500	50-110	500-1,100	50	500-1,100
				250-550
BALANCED USE ALTERNATIVE				
8,500	20-50	200-500	50	200-500
				100-250

\*Includes rehabilitation.

\*\*Not applicable as no development would occur under this alternative.



## CHAP. 4 — ENVIRONMENTAL CONSEQUENCES

3. The difference between initial and projected livestock use levels would be based on site potentials, the level of interacting use demands, and the level and direction of management.
4. Livestock operators will have up to five years to adjust ranching operations to coincide with any final adjusted livestock utilization levels.
5. Range data are sufficient to indicate current ecological condition and trend.
6. Noncompetitive use for forage between livestock and wildlife was not taken into consideration in the original allocation process. This would amount to an unknown quantity of additional forage that would be available for wildlife and livestock.
7. Forage which would be available for wildlife, on State and private lands, has not been included in allocating forage for wildlife.
8. The forage inventories and forage adjudications (AUMs) completed in the early 1960's are accurate with respect to total forage production and total utilization levels by livestock and wildlife. However, due to the kind and intensity of inventory conducted and the limited number of elk and wild horses at the time of adjudication, the following criteria were not fully considered (Oldroyd 1984):
  - a. Noncompetitive livestock/wildlife forage utilization,
  - b. Suitability, including distance from water,
  - c. Forage adjudication for wild horses,
  - d. Forage adjudication for elk.

Mitigation for forage actions are incorporated within the alternatives. See forage section in Chapter 2 and Appendix 8, Mitigating Measures for Land Treatments.

### Wildlife and Wild Horse Assumptions

There will be an unquantifiable loss in crucial big game range on State and private land. The loss would increase the big game forage demand on other State and Federal land.

### Threatened and Endangered Plant Assumptions

In any of the locations identified as having potential habitat for threatened and endangered plant species, clearance of the area will be required, as prescribed by law, and prior to initiating any surface disturbing activity, such as range improvement work, minerals development, watershed protection, etc.

### Woodland Assumptions

Productive timberland (Douglas fir) would be harvested on a 150-year rotation, woodland on a 150-year rotation for medium production sites, and a 125-year rotation for high production sites (pinyon-juniper), and cottonwood on a 65-year rotation. No live aspen or ponderosa pine would be harvested.

In calculating the allowable cut, the woodland resource for the Winter Ridge WSA is not included in the Current Management Alternative. The interim management policy does not permit commercial harvest of woodland products. However, for the other three alternatives, the forest resource is included in the allowable cut and would become available for harvest, if the area is determined to be unsuitable for wilderness.

### Recreation Assumptions

Flows of less than 250 cfs in the White River would be insufficient for floatboating.

### Visual Resources Assumptions

Many projects would have short-term visual impacts (three to five years) that may exceed the management objectives for a particular VRM class. However, these impacts would not be considered significant providing the projects conform to management objectives in the long term (10 to 20 years) following implementation.

### Water Use Assumptions

1. Water use under Current Management includes:

***-28,000 acre-feet for White River Shale Oil Corporation (tracts U-a and U-b),***

***-77,000 acre-feet for the high-level scenario projected in the Uintah Basin Synfuels Development EIS (37,000 for eight synfuels projects, 20,000 for municipal or industrial use and 20,000 for agricultural use),***

***-An estimated 62,000 acre-feet for the unresolved Ute Tribe entitlements,***

***-For a total of 167,000 acre-feet of water.***

2. Because of the many uncertainties regarding development technology, no attempt is made to quantify water needs for tar sand development.
3. All water needed for oil shale development would come from the White River.



## CHAP. 4 — ENVIRONMENTAL CONSEQUENCES

4. The amounts of water needed to develop two oil shale tracts would be the same as for developing tracts U-a and U-b (28,000 acre-feet).
5. ***Capacity of the White River Dam is 109,000 acre-feet.***

### Water Quality Assumptions

All waste water from oil shale development would be confined and recycled so it would not reach surface or ground water.

### Land Tenure Adjustment Assumptions

Where valuable minerals can be identified, all mineral rights would be reserved on land identified for disposal, unless the land is exchanged for other land having equal value.

### Air Quality Assumptions

1. The potential impacts to air quality from additional mineral leasing are based upon the probable production levels and mining and processing methods discussed previously in the minerals assumptions.
2. This air quality analysis was developed using several previously completed air quality analyses including the Uintah Basin Synfuels (UBS) Development analysis (Systems Applications 1983), the Combined Hydrocarbon Leasing EIS (BLM 1983f; Aerocomp 1984), and the Federal Oil Shale Management Program EIS (BLM 1983b; Dietrich et al. 1983). The analysis is based on the assumption that the high production level scenario of the Uintah Basin Synfuels Development EIS would occur over the next decade (BLM 1982b). This would represent the worst case analysis; however, eventual development may be somewhat less. The UBS analysis also considered the impact of the Bonanza Power Plant and the Plateau Oil Refinery as point sources.
3. The criteria for determination of the significance of impacts to air quality are related to the regulatory limitations set on air quality by the Prevention of Significant Deterioration (PSD) Regulations and the National Ambient Air Quality Standards (NAAQS) (Appendix 13).

### Socioeconomic Assumptions

A Denver Research Institute study identified a 10 percent annual population growth as being a general threshold level at which a government's ability to meet increased service demands often breaks down. This

level was used in determining the abilities of communities in this document to accommodate increased growth.

The economic and social analyses were based on the assumption that certain interrelated projects outside the scope of this document would be constructed. The projects include those discussed in the high production level scenario of the Uintah Basin Synfuels Development EIS (BLM 1982b).

## GENERAL IMPACTS

### MINERALS

Concurrent development of separate mineral resources, such as oil shale, tar sand, and oil and gas, in the same vicinity, could result in delays to one or the other of the developments. Cooperation between individual developers working in multiple-lease areas would be necessary to avoid or minimize resource loss.

In certain areas, oil and gas and combined hydrocarbon leases would be subject to special mitigating measures which may be perceived as being unduly restrictive by certain people or organizations. These special mitigating measures (reflected by the category system) would be of particular concern in areas with higher potential for oil and gas and tar sand resources. Table 4-7 compares category designations against favorable areas for oil and gas and tar sand resources **by alternatives**. On the other hand, any development in these same areas may be considered to be unduly destructive by certain other people or organizations.

Approximately 12,000 acres of tar sand within the Hill Creek STSA overlaps with the NOSR II (Figure 2-10). The tar sands within this area would be in Category 4, no lease under all alternatives, as required by Executive Order dated December 6, 1916. Development of the energy resources in this area would be delayed indefinitely.

### Right-of-Way Corridors

A variety of developments ranging from oil and gas pipelines to roads and powerlines could be located within a designated corridor. An individual project could cause a surface disturbance from 30 to 100 feet or three to twelve acres per mile. Although, theoretically, a mile wide corridor could contain more than one hundred rights-of-way, current undesignated corridors contain a maximum of three. The types of impacts which could be expected from road construction would be similar to those previously described in the environmental assessment for the proposed highway from Bonanza to Vernal, Utah (BLM 1981a). Impacts of pipelines and electrical transmission lines would be



## CHAP. 4 — ENVIRONMENTAL CONSEQUENCES

similar to those described in environmental impact statements for Mapco's Rocky Mountain Liquid Hydrocarbons Pipeline (BLM 1980b) and the Moon Lake Power Plant Project (BLM 1981b).

Corridor designation would reduce anticipated environmental impacts from random or unplanned right-of-way networks by avoiding sensitive resource areas. Surface and visual disturbances associated with rights-of-way development would be confined to corridor areas. In some cases, costs to companies constructing the projects may increase an unquantified amount due to an increase in miles necessary to remain within the corridor. Processing of applications would be expedited through simplified environmental review.

Although environmental consideration is a criterion used in selecting corridor routes, not all resource conflicts could be resolved. Conflicts with important resource values are shown by alternative for each corridor segment (Appendix 9, Utility Corridor Segments by Alternative).

### Forage

This general section contains facts and impacts that are common to more than one locality or alternative. The facts and impacts are discussed in detail in this section and are merely referred to in the rest of the text.

The basic unit affected by the actions proposed under the respective alternatives is the ecological site. For purposes of analysis and application of management, the natural environment has been classified into sites. Each site is characterized by a particular climate, specific soils, a defined mix of plants, and a certain production potential. Elevation, aspect, and parent material have a direct bearing on these characterizing elements. Grazing animals (livestock, wildlife, wild horses) can have a significant effect on the plant mix or vegetation. Soils may also be affected but less directly. The degree of livestock grazing impact is directly related to the site. For instance, a desert site generally has lighter colored, less fertile soils and sparser vegetation than a mountain site. Hence, the impact of a given stocking level would be much greater on a desert site than on a mountain site.

The practice of allocating a portion of the annual forage production, (an amount in balance with plant needs) to consumptive use by livestock, is termed "proper use stocking". The concept of proper use allows the maintenance of plant food reserves, resists invasion of undesirable and unproductive plants, and allows for the increase of desirable plants and ground water supplies by improving ground cover and infiltration (Dyksterhuis 1951). Harvest of a portion of the annual plant production tends to stimulate growth and plant vigor, thus ensuring sustained yield by the plant. The

level of use needed to attain sustained use is relative to the specific plant, the site, and the season of harvest. Proper use of major forage plants is usually set at 50 percent (BLM 1983g). However, it has been found that light use (21 to 40 percent) is generally more conducive to range improvement than moderate use (41 to 60 percent) (BLM 1983g).

Heavy grazing can have excessive impact on the root system of plants. Approximately one third of the root system must be replaced annually. Under heavy use, replacement cannot take place; hence, root volume and plant vigor decreases. The plant's ability to compete with less desirable plants, often weedy annuals, is reduced. The result is a decline in site condition (Hormay 1970, Dietz 1975). If excessive use of the vegetative cover occurs over a prolonged period, significant soil loss could occur. The basic site could be altered and long-term productivity reduced.

Hormay also pointed out that it is unrealistic to assume plants will be grazed at proper use levels simply by adjusting stocking levels. Livestock graze selectively both by plant species and by areas. This can result in over-use of preferred plants and accessible areas, especially floodplains, riparian zones, water service areas, trails, bedgrounds, sheltering areas, etc. Selective grazing under constant stocking levels combined with wide, natural variability in annual production, can result in severe use of preferred plants and grazing areas, particularly during dry years.

It has been determined that grazing during the spring growth period has the greatest impact on a plant's ability to maintain adequate levels of root reserves. As much as 75 percent of a plant's stored carbohydrates are required to initiate the first 10 percent of new growth (Stoddard and Smith 1955). Grazing during any part of the growth period reduces the plant's carbohydrate reserves (Cook 1966).

Plant reproduction is a critical element in maintaining or improving desirable range conditions (Hormay 1970). Periodic deferment to allow production of seed and seedling establishment is vital for key plants which reproduce through seed.

Grazing practices, such as continuous grazing, which do not take into account the physiological requirements of the plant, would have a detrimental impact on site condition. The extent and intensity of the impact would relate to the stocking level.

Reductions in livestock numbers do not necessarily result in improvement of site conditions. If the selective pattern of grazing is not changed, the plant's physiological requirements still may not be met.

Complete deferment of grazing during the critical plant growth period (from plant beginning to the peak



## CHAP. 4 — ENVIRONMENTAL CONSEQUENCES

flowering stage) of key plants, on an annual basis, is the single most effective treatment in restoring and maintaining plant vigor. Systems which provide periodic deferment will also result in improvement, but on a more long-term basis.

Conversely, deferment of grazing during the critical spring growth period can impose hardships to livestock operations (see economic section, Resource Protection Alternative).

Winter grazing generally has less impact than other seasons of use because plants are dormant and carbohydrate reserves are least affected (Cook 1966, Hutchings and Stewart 1953). This is particularly true where grasses and forbs, which store food reserves in the roots, are key management species.

Where shrubs are key forage plants, adverse impacts can occur when more than the current year's growth is harvested, since food reserves are stored in both the roots and twigs. Heavy winter grazing can result in depletion or loss of black sage, winter fat, or other species depending on the kind of grazing animal and intensity of use (Holmgren and Hutchings 1974).

The concept of rest rotation grazing comes closest to satisfying plant physiological requirements since systematic deferment is provided to maintain or improve plant carbohydrate reserves, seed production and seedling establishment. Under this system, livestock are also afforded periodic maximum use of the forage.

Impacts to the grazing animals can be somewhat different than plant response. In some instances rotation grazing can increase livestock stress and reduce animal gains. Yearling gains were higher under continuous grazing than under deferred grazing according to (Hormay 1970). However, where the ecologic range condition is poor or fair and the pasture overgrazed, livestock gains would be low but would increase as forage conditions improved (Hormay 1970). Where conditions were good, rotation grazing would reduce individual animal gains, but total production would increase due to greater carrying capacity and livestock numbers (Smoliak 1960).

The manner in which the livestock are handled and the time allowed for pasture moves are important factors in animal stress (BLM 1983g). The degree of negative impact, resulting from a grazing system, relates to the arrangement and number of pastures and the increase in AUMs derived from following the grazing system. Where grazing systems are simple (having a minimal number of pastures and well-arranged moves), and a substantial increase in AUMs from the grazing system is gained, there is no net negative impact (BLM 1983g).

Some beneficial affects can accrue to livestock under rotation grazing. Early use can be made of rest pastures. Old growth can provide shelter to calves and can

reduce incidences of grass tetany and scours. The impact of rest required for pastures (one and one-half to three years) in conjunction with vegetative treatment can be lessened, if the required rest can be scheduled with the normal rest treatment (Hormay 1970). Breeding success can be increased by subdividing large areas into pastures. Cows are concentrated and more available to bulls.

Ecologic condition and forage production can be improved through vegetative treatment. Prescribed burning of dense (25 percent or greater canopy), big sagebrush would greatly reduce canopy of big sagebrush. Grass cover would increase resulting in at least a doubling of forage production (Ralfs and Busby 1979). The longevity of the effects depend on the grazing practices applied and moisture patterns.

Chemical treatment to control sagebrush has resulted in similar increases in production. Doubled yields were reported on study plots receiving 10 to 13 inches of annual precipitation (Nielson and Hinckley 1975). On sites where sagebrush was intermingled with browse species, damage occurred to aspen, chokecherry, serviceberry, snowberry, and bitterbrush (Blaisdell and Mueggler 1956). However, a large proportion of these species resprouted abundantly. Bitterbrush was consistently killed if sprayed when plants were less than 12 inches tall (Nielson and Hinkley 1975). Plants over 12 inches were only slightly damaged if spraying occurred prior to, or at the time of leaf origin.

Significant increases in bitterbrush density can occur following chemical treatment. Forbs are generally reduced when treated with the herbicide 2-4-D (Nielson and Hinkley 1975). Of 38 species studied, 13 were moderately or severely damaged. Among them were balsam root milk vetch, bluebell, and lupine (Blaisdell and Mueggler 1956).

Chaining pinyon and juniper allows release of understory forage or seeded species and can result in production of 200 to 700 pounds per acre (Valentine 1971). The debris and disturbance resulting from chaining can have an adverse effect on the aesthetics of the area. In areas with woodland value, it can also greatly reduce the value of woodland products. It has also been observed that the incidence of fire is greater in chained areas (Smith 1984).

### Cultural Resources

Construction and land modification activities could cause disturbance and modification to cultural resources that occur within the affected area. Impacts could include destruction or alteration of the resource base (sites, artifact and feature relationships, artifact displacement; removal, destruction and alteration of the surrounding environment) and the introduction of visual, audible and atmospheric elements out of character with



## CHAP. 4 — ENVIRONMENTAL CONSEQUENCES

the present environment. These impacts would result in a loss of scientific, educational and recreational values in a site or region and a loss of a portion of the resource base for future research or use. The loss of any information could have a significant impact on efforts to reconstruct the prehistory and history of the region, including data pertinent to many other types of anthropological studies and related disciplines. The majority of site disturbance could be avoided by proper placement of facilities. Where avoidance is not possible, data recovery by salvage excavation would mitigate most adverse effects. The total number and significance of the affected sites is unknown.

The loss of these values, on the other hand, would be partially offset by information gained from overall excavation and salvage programs. Such information would add to the growing data base for cultural resources in Utah and enhance our knowledge of prehistoric resource utilization and settlement patterns.

Indirect impacts would increase as a result of greater accessibility and local population increases. Recreational activities of two types, those intentional illegal activities associated with artifact collection and treasure hunting, and unintentional recreational use (hiking, hunting, off-road vehicles), could **cause** irreparable site damage. Both scientific and aesthetic site values would be lost as a result of these indirect impacts.

Site specific effects would be assessed when project specific locations, applied technologies, **and right-of-way locations** are determined (BLM 1981b).

### Paleontology

The primary concentration of hydrocarbon development would occur in the Green River and Uinta Formations which are known to contain important fossils of fish, reptile, bird and mammal species. Construction activities could also provide new paleontological information.

An unknown amount of paleontological resources would be destroyed by ground-disturbing activities. Large scale mining activities could destroy or reveal buried paleontological resources. Those projects which disturb only the soil layer would have the least probability of destroying or discovering paleontological remains.

Collection and removal of fossils from known fossil areas would result from the anticipated population increase, resultant increase of people in known fossil areas, and the exposure of fossils by project construction. An unquantifiable amount of paleontological resources which have scientific and educational values would be lost.

## Endangered, Threatened, and Sensitive

### Plant Species

Surface-disturbing activities proposed for each alternative would have the potential to adversely affect endangered, threatened, and sensitive plant species and their habitats. Impacts could include destruction of individual plants and destruction or degradation of occupied and potential habitats.

Mitigating measures requiring survey and clearance prior to proposed surface disturbing actions would reduce the potential for significant endangered and threatened plant or habitat loss. In some areas, resource development could not occur due to the presence of endangered or threatened species.



# SPECIFIC IMPACTS

## CURRENT MANAGEMENT ALTERNATIVE

### MINERALS

#### Interrelated Impacts

State leased and private oil shale and tar sand projects, (BLM 1982b) when considered collectively, would use a major portion of the available air quality increments and 36 percent of available White River water supply (refer to water use and air quality sections). Because of this, some future oil shale and/or tar sand programs located on public lands could be significantly delayed or eliminated. Air quality and water rights are handled through the State of Utah.

#### Oil and Gas

##### BLM Impacts

Total annual disturbance from drilling activities associated with 40 to 80 new wells would be 160 to 480 acres. Approximately 50 to 150 acres associated with non-productible wells would be subsequently available for reclamation. This level of activity and resulting disturbance would remain the same under every alternative. Drilling activities would continue to depend on market conditions.

The conflicts between other surface resources (reflected by the category system) and the potential oil and gas areas (favorability system) is summarized by alternative in Table 4-7 (Acreage Conflicts Between Category Designations and Oil and Gas Favorability Areas).

BLM's interim wilderness management policy could delay development of some existing and potential leases in the Winter Ridge Wilderness Study Area (UT-080-730, BLM 1979a), (Figure 1-4). The oil and gas resources could remain undisturbed until Congress makes a wilderness or non-wilderness determination.

#### Oil Shale

##### BLM Impacts

Anticipated production levels, environmental impacts, and mitigating measures associated with the White River Shale Project are analyzed in a detailed development plan, and will not be repeated here (Bechtel Petroleum 1981).

No additional leasing would occur.

#### Tar Sand

##### BLM Impacts

No tar sand development would be allowed under this alternative; therefore, no impacts resulting from tar

sand development would occur.

#### Gilsonite

##### BLM Impacts

Current activity and production levels would continue to depend on market trends. A total of 5 to 45 mine staging areas would be developed on new Federal leases causing a surface disturbance of 15 to 135 acres over a 10 year period. This level of impact would remain constant under all alternatives.

#### Sand and Gravel

##### BLM Impacts

No significant use of sand and gravel would occur as a result of BLM proposed actions for this alternative. Over the next several years, surface disturbance resulting from sand and gravel development would be negligible, as removal would generally continue to occur in established removal areas.

#### Building Stone

##### BLM Impacts

Collection of building stone would continue at approximately the same levels as experienced in the past several years. Anticipated demand would not require the opening of new building stone areas or major expansion of old ones; therefore, little additional surface disturbance would occur.

## RIGHT-OF-WAY CORRIDORS

##### BLM Impacts

Approximately 61,500 acres would be informally designated as corridors under this alternative (Figure 2-5). Should these corridors be developed, anticipated resource conflicts would occur in crucial wildlife habitat, critical and severe erosion areas, habitat for threatened and sensitive plant species, floodplains, a river corridor, a public water reserve, visual resource management areas, and productive woodlands (Appendix 9, Utility Corridors and Segments by Alternative). However, because the number of rights-of-way applications that would be received over the next several years is not known, anticipated impacts cannot be quantified. Site specific environmental documentation would be prepared for construction within the 170 miles of proposed corridors when specific right-of-way applications are received.



Table 4-7

## Acreage Conflicts Between Category Designations and Oil and Gas Favorability Areas

BLM Designation	Category 1 Standard Stipulations	Category 2 Special Stipulations	Category 3 No Surface Occupancy	Category 4 No Lease
Current Situation Alternative				
Oil & Gas				
Favorability F1 (low)	23,000	0	5,000	4,000
F2 (moderate)	653,000	159,000	21,000	12,000
F3 (high)	117,000	27,000	6,000	0
Resource Protection Alternative				
F1	2,000	26,000	2,000	0
F2	416,000	370,000	38,000	24,000
F3	55,000	70,000	9,000	12,000
Commodity Production Alternative				
F1	28,000	2,000	0	0
F2	815,000	29,000	3,000	0
F3	146,000	4,000	0	0
Balanced Use Alternative				
F1	22,000	7,000	1,000	0
F2	470,000	365,000	13,000	0
F3	60,000	88,000	2,000	0



## CHAP. 4 — CURRENT MANAGEMENT ALTERNATIVE

The informal corridors considered for this alternative would not be sufficient to accommodate anticipated industry requirements.

### FORAGE

#### Interrelated Impacts

There are two interrelated projects which will effect the forage resource in the BCRA: the White River Shale Project and the White River Dam Construction (Bechtel Petroleum, Inc. 1981), (BLM 1982c). These impacts will occur within the Bonanza-Rainbow Locality; five allotments will be affected (Table 4-9, Forage Impacts from Interrelated Projects).

The permittees in the Little Emrna and White River Bottoms allotments will be the only operators that are significantly affected. Construction and spent oil shale disposal will eliminate 14 percent of the forage in the Little Emma allotment. The loss of forage will exceed ten years in duration; however, rehabilitation may eventually eliminate the loss. The White River Bottoms allotment will lose 21 percent of the available forage. Since this area will become part of the White River Dam Reservoir, the forage will be permanently lost.

#### BLM Impacts

##### Blue Mountain Locality:

Authorization of 5,835 AUMs for livestock and 1,768 AUMs for wildlife would continue under this alternative. A gradual decline in ecological condition would continue on three allotments: Blue Mountain AMP, Point of Pines, and Stuntz Valley. Three other allotments would remain static (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 7,200 acres (19 percent) would decline. Of the areas in decline, approximately 10 percent would change a full condition class (Appendix 16, Anticipated Changes in Ecological Condition Class). The remaining 30,800 acres would remain in a static condition. This decline would occur mainly in the mountain stony loam and mountain loam sites (Appendix 10, Ecological Sites and Conditions by Locality). Sagebrush would continue to increase on the sagebrush treated areas because no treatment of sagebrush would take place. The apparent decline in condition results from three factors: the current pattern of heavy utilization of forage by livestock and wildlife, continuous season long use, and the natural tendency of sagebrush to dominate over grass.

##### Bonanza-Rainbow Locality:

Continuation of the present grazing practices and 37,352 AUMs for livestock, 762 AUMs for antelope, 480 AUMs for wild horses, and an unknown portion of

12,784 AUMs for deer would not change the existing trend in ecological condition. Six allotments (Antelope Draw, Asphalt Draw AMP, Hells Hole, Olsen AMP, Stateline, and West Deadman), would continue to improve and 19 allotments would remain stable. Four allotments would continue to decline: Badlands, Jensen, Kane Hollow, and Spring Hollow Appendix 14 (Anticipated Trend in Ecological Condition) and Appendix 5 (Forage Actions by Alternative). Approximately 24,800 acres would continue to decline, 363,600 acres would remain static and 244,900 acres would continue to improve. A net effect for the locality would be a change of less than 5 percent in ecological condition class from fair to good Appendix 16 (Anticipated Change in Ecological Condition Class).

Areas that are receiving light or no grazing use due to a lack of water, licensed nonuse, or other limiting factors, would continue to show an improvement in ecological condition. Areas where livestock tend to concentrate (near water, bedgrounds, etc.), or where heavy spring use occurs, would continue to decline or remain static. Season long use would affect plant vigor as discussed in the general impact section. The present practice of grazing fewer animals (39 percent nonuse) would decrease the potential for forage impacts resulting from spring grazing.

Both antelope and wild horses would continue to consume forage which has been allocated for livestock use. Based upon the existing level of livestock nonuse, the forage resource would not be overutilized; however, the improvement in ecological condition that would be expected through livestock nonuse would not be attained.

In this locality, 308 AUMs of forage would be lost as a result of mineral developments (Appendix 15, Forage Impacts).

##### Book Cliffs Locality:

The trend of ecological condition would remain unchanged with current grazing practices and allocations of 17,351 AUMs for livestock, 108 AUMs for wild horses, an unknown portion of 12,784 AUMs for deer, and an unknown portion of 3,192 AUMs for elk. Three allotments (Atchee Ridge AMP, Horse Point AMP, and Sweetwater AMP) would continue to have an improvement in ecological condition; four allotments would remain in a static ecological condition. No allotments would decline in overall ecological condition (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 4,400 acres would decline in ecological condition, 86,800 acres would remain in a static condition, and 212,900 acres would continue to improve. The net improvement would be a change of less than 5 percent in ecological condition class (Appendix 16, Anticipated Trend in Ecological Condition Class).



## CHAP. 4 - CURRENT MANAGEMENT ALTERNATIVE

Table 4-9

### Forage Impacts From Interrelated Projects

Allotment Name & Number		Approximate Acres Lost	Approximate AUMs Lost	Percentage of Active Preference
White River Shale Project				
Hells Hole	8819	470	27	1%
Little Emma	5852	2,475	653	14%
Subtotal		2,945	680	
White River Dam Project				
White River				
Bottoms	5850	640	103	21%
State Line	5863	285	41	2%
Antelope Draw	5854	597	86	1%
Subtotal		1,522	230	
Total		4,467	910	



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Four allotments (Atchee Ridge AMP, Horse Point AMP, Sweetwater AMP, and Winter Ridge AMP) totaling approximately 270,200 acres, would operate under grazing systems which rotate grazing use to avoid the impacts of spring grazing upon plant vigor. Three allotments (Book Cliffs Pasture, McClelland, and Westwater Point) approximately 11 percent of the locality, would operate with season-long grazing use Appendix 5 (Forage Actions by Alternative). The changes in ecological condition resulting from grazing distribution, licensed nonuse (25 percent), and season-long grazing would be similar to the impacts described for the Bonanza-Rainbow Locality.

A lack of water on many of the ridges would keep both livestock and wildlife from using the existing forage, even though it was allocated during the 1960's (Oldroyd 1984). Forage consumption would thus be increased in areas in proximity to useable water. The nonuse taken by livestock operators and the existing wildlife populations, would not result in enough cumulative demand for forage to adversely affect range trend. Localized problems in range condition, totalling approximately 4,400 acres, would exist (Appendix 11, Allotment Statistics).

Wild horses would continue to use approximately 108 AUMs which have been allocated to livestock. No competition would occur for the forage because of the existing livestock nonuse. The total improvement in ecological condition that would be expected to result through livestock nonuse, would not be attained.

Forage for elk (approximately 3,200 AUMs) would continue to be provided from forage that was initially allocated to deer (approximately 38,800 AUMs). The average deer use in herd unit 28A would be approximately 12,800 AUMs. This leaves approximately 22,800 AUMs allocated for, but unused by wildlife in deer herd unit 28A and elk herd unit 21.

Within this locality, approximately 224 AUMs would be lost through mineral developments (Appendix 15, Forage Impacts).

### Hill Creek Locality:

Continuation of the present grazing practices and 6,442 AUMs for livestock, 1,881 AUMs for wild horses, an unknown portion of 12,784 AUMs for deer, and an unknown portion of 3,192 AUMs for elk would not change the present trend in ecological condition. No allotments would decline. Three allotments (Lower Showalter, Oil Shale, and Ute) would continue to improve; nine allotments would remain static (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 107,200 acres would remain in a static condition and 32,700 acres would continue to improve. A net improvement would be a change of less than 5 percent in ecological condition class (Appendix 16, Anticipated Trend in Ecological Condition Class).

Two allotments (Green River AMP and West Tabyago AMP), totalling approximately 32,100 acres, would operate with grazing systems that would rotate livestock use to avoid the impacts of spring grazing. Ten allotments (approximately 77 percent of this locality) would operate with season-long grazing use (Appendix 5, Forage Actions by Alternative). The changes in ecological condition resulting from grazing distribution, licensed nonuse (49 percent), and season-long grazing would be similar to the impacts described for the Bonanza-Rainbow Locality.

Wild horses would consume approximately 1,880 AUMs that have been allocated for livestock use. Elk would also consume an unquantifiable amount of forage which has been allocated for livestock use. The expected total forage consumption by all animals would be less than the carrying capacity of the range, due to the large percentage of livestock nonuse taken by the permittees. The improvement in ecological condition that would be expected through nonuse would not be as great.

Within this locality, approximately 437 AUMs would be lost through mineral developments (Appendix 15, Forage Impacts).

## WILDLIFE/WILD HORSES

### BLM Impacts

The utilization of 18,506 AUMs of existing forage from BLM lands by big game species, including 1,325 AUMs from Dinosaur National Monument, and approximately 2,469 AUMs by wild horses, would be sufficient to support big game and wild horse forage demands.

The distribution of the various wildlife species would be: 611 antelope (475 at Bonanza-herd unit 7, 136 at East Bench); 7,700 mule deer (1,500 at Blue Mountain-herd unit 26, 6,200 at Book Cliffs-herd unit 28A); 500 elk (all located at Book Cliffs-herd unit 21); 206 wild horses (40 at Bonanza, 157 at Hill Creek, 9 at Winter Ridge). Wild horse populations would continue to be managed at all 3 locations--Bonanza, Hill Creek, and Winter Ridge. Projected oil and gas development (up to 80 new wells per year) would affect crucial antelope, mule deer, elk, and wild horse habitat. The majority of the animals affected would be displaced into surrounding areas (Hamilton 1984). Forage lost to development is shown in (Appendix 15, Forage Impacts). ***Impacts to sage grouse populations on Blue Mountain, East Bench, Winter Ridge, and the Bonanza and PR Spring areas would be insignificant. This is based on the buffer zone surrounding known leks and mitigation provided (Appendix 4). Given the amount of surrounding suitable habitat, other upland game***



## CHAP. 4 — CURRENT MANAGEMENT ALTERNATIVE

*bird species and waterfowl would not be significantly affected. Opportunities for significant population expansion would probably be limited, should the projected degree of development occur simultaneously. Generally speaking, the BCRA itself receives limited waterfowl use. Displaced birds would most likely shift their activities to adjacent habitat outside the BCRA (the Green River, Stewart Lake, Pelican Lake, Pariette Waterfowl Area, etc.). The net overall change in number of broods produced would not be significant.*

While disturbing existing habitat conditions for the short term, over the long term prescribe burns would improve wildlife habitat and increase the quality of available forage. Development of 10 to 30 water projects would result in a better distribution of big game species and result in utilization of suitable areas of habitat and forage not currently in use.

Threatened and endangered wildlife species would not be affected by development as detailed in this alternative.

### WOODLANDS

#### Interrelated Impacts

With an annual harvest rate of 6,500 cords, demand would exceed current wood growth by 2,400 cords by 1995. In 1982, firewood demand from the population of the Uintah Basin amounted to 2,200 cords per year. By 1995, the increased population associated with interrelated projects proposed in the Basin could increase demand by 4,300 cords for a total of 6,500 cords per year.

Assuming a harvest rate of 6,500 cords per year and an average stocking of 11 cords per acre, woodlands would be eliminated at a rate of approximately 220 acres per year. The conversion of woodlands to rangeland as a result of harvest activities would eventually result in additional forage for livestock and wildlife.

#### BLM Impacts

Because no actions which would result in large population increases are proposed for this alternative, demand for firewood in the BCRA would not significantly increase.

### RECREATION

#### Interrelated Impacts

By 1995, the increased population associated with interrelated projects proposed in the Basin could increase the number of BCRA visitor hunting days by an additional 3,650 to 10,420 visitor days. As a result, hunter

success would likely decline by an unquantified amount, thereby lessening the recreational experience.

In 1982, participation for all other forms of recreation such as small game hunting, river floating, and ORV use was estimated to be 7,200 visitor days. An estimated increase of 12,000 for a total of 19,200 visitor days is expected by 1995. The impact of increased visitor use will affect ORV use. Since the Current Management Alternative proposed no ORV travel restrictions, ORV travel is expected to increase by an unquantified amount, especially in areas close to Vernal and adjacent to developed energy sites.

It would be expected that damage to vegetation and soil, harassment to antelope and wild horse herds in the Bonanza area, and disruptions to the deer herd on their crucial winter range on Lower McCook Ridge would become a growing problem.

Sufficient undeveloped areas would be available to accommodate the increase in dispersed activities such as sightseeing, camping and river floating. However, there would be a slight, undetermined decrease in solitude in popular use areas and a slight, undetermined increase in vandalism of both public and private property.

#### BLM Impacts

Continuation of BLM current management would not change demand for outdoor recreation except for a small (400 visitor day) increase in big game hunting by the year 1995.

No large-sized surface disturbances are anticipated that would alter VRM class standards.

Retention of the Book Cliffs Mountain Browse Natural Area would continue to provide a useful vegetation study plot where long-term vegetative changes on managed lands could be compared to untreated areas.

### FIRE MANAGEMENT

#### BLM Impacts

Employment of full suppression of wildfire would protect 1,070,000 to 1,075,000 BCRA acres, safeguard private property, and prevent the spread of wildfire to non-Federal lands.

Prescribed burns, while disrupting the existing conditions, would, in the long term, improve overall forage quality, benefitting livestock and wildlife.

### WATERSHED

#### Water Use



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### Interrelated Impacts

Interrelated projects would annually deplete 167,000 acre-feet from the White River (*refer to Chapter 4, Water Use Assumptions*). The depletion is 36 percent of the average annual flow and exceeds by 58,000 acre-feet the capacity of White River Dam. This would require proponents of some projects to purchase water rights from other sources.

### BLM Impacts

Implementation of any of the BLM actions, would not cause a significant increase in water use.

### Water Quality

#### Interrelated Impacts

Depleting an additional 167,000 acre-feet of water from the White River per year, would increase the total dissolved solids (TDS) concentration at the mouth of the White River by an estimated 12 milligrams per liter (mg/l). At the Imperial Dam, the TDS increase would be approximately 5 mg/l.

### BLM Impacts

BLM actions would have no significant impacts on water quality.

### Soils

#### BLM Impacts

The construction of up to 500 detention-retention dams on the 10,000 acres of severe or critical erosion areas, would reduce soil loss by 64,000 tons over the next decade. Surface disturbances caused by dam construction would increase wind and water erosion by an expected insignificant, but undetermined, amount for three to five years.

Under this alternative, severe and critical erosion areas would not be protected from oil and gas activities. However, the small amount of surface disturbance (1,200 to 3,800 acres during the next decade) would not significantly affect cumulative soil erosion, although localized erosion problems could occur.

No other BLM actions would significantly affect soils.

### Floodplains

#### BLM Impacts

Floodplains would not be significantly affected by implementation of any BLM actions.

### Boulevard Ridge Study Area

#### BLM Impacts

Management of the watershed study area would continue to provide scientific data.

### LAND TENURE ADJUSTMENT

#### BLM Impacts

Land ownership could change on up to 1,360 acres available for exchange or sale (Figure 2-7). No applications or specific proposals have been received, so a detailed impact analysis is not possible at this time. However, no significant changes in environmental condition or land management practices would result if exchanges or sales occurred as anticipated for this alternative. Site specific environmental analyses would be done when proposals are received.

### AIR QUALITY

#### Interrelated Impacts

Air quality in the region of the BCRA is expected to deteriorate to some degree over the next ten years, without any further Federal leasing actions. Air pollution emissions from resource development, conversion activities and population growth, and the resulting air quality increment consumption, were analyzed in the Uintah Basin Synfuels Development EIS (BLM 1982b). The emission sources analyzed included units one and two of the Bonanza Power Plant, the White River Oil Shale Project, the Plateau Refinery Expansion, and seven Utah Synfuels proposals, assumed to be on line by 1990. Synfuel production levels analyzed were 320,500 bpd for the high level alternative, and 121,400 bpd for the low production level.

It was determined that air quality impacts resulting from the direct emissions of these projects would not exceed applicable air quality standards and PSD increments. However, near source, maximum 24-hour average total suspended particulate (TSP) concentrations, would be close to the Class II PSD incremental increase allowances.

Secondary emission sources related to population growth and related activities were also analyzed. The analysis considered the potential limitation of the prevention of significant deterioration (PSD) Class I and Class II standards, as well as impacts to areas of special concern, including the Uintah and Ouray Indian Reservation, Dinosaur National Monument, and the High Uintas Primitive Area.

The Class II increment limitations could be exceeded in the Dinosaur National Monument and the Uintah and Ouray Indian Reservation. The impacts to Dinosaur Na-



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tional Monument would be largely from secondary particulate emission sources, whereas impacts to the Uintah and Ouray Indian Reservation would be the result of both primary particulate emissions from the synfuels facilities and secondary emissions. Both the 24-hour maximum and annual average incremental limitations could be exceeded in these areas. The towns of Vernal, Utah and Rangely, Colorado, would also be significantly affected, primarily from secondary emissions.

Because most of these particulates are large, they are not respirable and are believed to have little health effect. If the fugitive dust from secondary sources were to be included in the consumption of the PSD increments for TSP, and mitigation measures, such as paving roadways, were not employed, it is quite likely that PSD Class II increments for TSP would be exceeded in much of the region.

The predicted high TSP concentrations from secondary emissions are not expected to greatly reduce regional visibility; but, they would cause local dust clouds. Worst-case reductions in regional visual range are anticipated to occur in the summer when sulfate formation rates are highest. Worst regional visual range reduction is projected to be less than 10 percent, and would be principally due to sulfate aerosol formed in the atmosphere from regional sulfur dioxide (SO<sub>2</sub>) emissions from synthetic fuel facilities and power plants. For up to 50 days annually, yellow-brown atmospheric discoloration, resulting from emissions of nitrogen oxides from synthetic fuel facilities and power plants, may be visible on the Uintah and Ouray Indian Reservation and at Dinosaur National Monument.

Significant, local reductions in visual range could occasionally be observed in stagnant haze layers, principally in the winter. These hazes would be caused by TSP emissions from industrial facilities, wind-blown dust, dust from roadways, and smoke from residential wood stoves and fireplaces. The hazes would be localized and would not affect regional visibility.

That amount of air quality degradation permitted for the interrelated projects is irretrievably committed for the life of those projects. Some degradation of air quality would be irreversible due to established urbanization in the area after closure of the oil shale and tar sand facilities.

### BLM Impacts

As no major new projects are considered in this alternative, the continuation of BLM's current management would have no significant impact on the region's air quality.

## SOCIOECONOMICS

Methodologies and computations that were used to

estimate economic impacts are discussed in Appendix 12 (Methodology for the Economic and Social Analysis).

### Economic Conditions

#### Interrelated Impacts

The local economic conditions would be affected by development of the interrelated projects identified in Assumptions and Guidelines.

The Uintah Basin Synfuels EIS analyzes various levels of development associated with these projects. The reader is referred to that document for an in depth analysis of the anticipated socioeconomic impacts of synfuel development in the Uintah Basin. In summary, that analysis suggests that the most challenging consequence of the development of the synfuels projects would be the need for orderly management of population growth and its attendant factors. The Uintah Basin population is projected to increase to as much as 151,739 by 1995, or about two and one-half times its present number. This could create problems of substantial magnitude for local city and county governments, as well as for the Ute Indian Tribal Council. Meeting this challenge would necessitate a cooperative effort by the synfuels project developers, the governing entities, and the majority of the citizens involved.

#### BLM Impacts

Management decisions associated with the Book Cliffs RMP would not alter the interrelated projects or their resulting impacts.

Implementation of the Current Management Alternative would result in the retention of the existing oil and gas category system. As a result, oil and gas development would continue in much the same manner and production level as in the past, and would continue to be a reflection of current market conditions. Under this alternative, the petroleum industry would continue to provide 71 percent of the total employment in the mining sector of Uintah County, 16 percent of the total county employment, and 26 percent of total county personal income. Duchesne County would continue to receive 30 percent of its employment and 44 percent of its income from the petroleum industry. These figures are averages, recognizing that the BCRA would continue to experience minor "boom" and "bust" cycles, which would affect employment and personal income figures.

For the foreseeable future, gilsonite, sand and gravel, metal mining, and miscellaneous mineral activities would continue as they have for the past several years, employing about 300 persons and contributing a minor amount of employment and personal income to Uintah County residents (Table 3-5).



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Implementation of this alternative would not result in the development of the tar sand resource in the BCRA and oil shale development would be limited to the U-a and U-b leases. Therefore, potential employment and revenues associated with tar sand and additional oil shale development would not be realized in the foreseeable future.

None of the quantifiable management actions under this alternative would cause any significant change to livestock operators or existing livestock operations. The public rangeland forage available to many livestock operators would continue to be decreased by ongoing mineral-related activities (see forage section). These losses would not affect existing forage use or rancher income; however, they would reduce the potential carrying capacity of several ranches. Since one of the major factors affecting operator wealth is ranch carrying capacity, these forage losses could reduce ranch values. Since base properties are used as collateral for some types of loans, a reduction in ranch value could have some effect on the total indebtedness allowed.

Since the aggregate rancher income is not expected to change under this alternative, the rancher's ability to repay a loan should not be affected.

Recreation activities would not be significantly affected by BLM recreation management actions. However, estimated population increases, as projected, would increase recreational activities and activity days. Expenditures, income, and employment in the impact area would correspondingly increase as more hunters are attracted to the area. By 1995, BLM actions would result in a 400 hunter day increase and an \$18,000 hunter expenditure increase.

### Social Conditions

None of the management actions discussed in implementing the Current Management Alternative would noticeably change the social environment of local communities.

## TRANSPORTATION

### Interrelated Impacts

Increases in traffic volumes and changes in levels of service on the four major area highways, resulting from interrelated projects, are shown in Table 4-10. By 1995, all roads, with the exception of County Road 262 between U.S. 40 and Bonanza, could have an unsatisfactory level of service which would result in a possible accident rate increase, traffic congestion, and road deterioration.

If a new town were to be constructed at Westwater, in Grand county, as discussed in the economics section, a new road up the south slope of the Book Cliffs Mountains to the BCRA, would be required. BLM actions alone would not be the determining factor in deciding if such a town and highway would be built. If the new town and highway are constructed, the projected traffic volumes for the four major highways in the BCRA, could be reduced by an unknown amount.

### BLM Impacts

Under this alternative, BLM impacts to transportation would be insignificant and the levels of service would not change from those discussed above.

## UNAVOIDABLE ADVERSE IMPACTS

Forage on an estimated 5,135 acres would be lost as a result of mineral developments. Ecologic condition would continue to decline on 38,600 acres.

Wildlife and wild horses displaced by mineral development into surrounding areas of suitable habitat could be subject to crowding, stress, and competition for forage, water, and cover. In addition, an unquantifiable amount of habitat surrounding each oil and gas well would be abandoned by most wildlife species. This impact could be significant if it is concentrated in or near deer and elk fawning and calving areas.

An unquantifiable increase in soil erosion and loss would result from oil and gas activity.

## IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Minerals mined and subsequently consumed or left underground as unrecoverable would be irretrievably lost.

Soil lost to oil and gas activity would be an irretrievable loss.

Big game losses through displacement from habitat, or illegal killing would be irretrievable. Despite increased losses of individual animals, vitality of the herds would be expected to be maintained.

## SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Because of constantly improving mining technology and practices, present mineral production would be less efficient than future mineral production.

In areas where grazing has resulted in poor ecological condition, the loss of topsoil or source of seed for perennial plants, could reduce the long-term productivity of the range.



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Table 4-10  
Projected Average Daily Traffic Levels for Current  
Baseline and Interrelated Projects

Highway Segment	1985			1995		
	Baseline	Interrelated	Total	Baseline	Interrelated	Total
<u>Utah 88</u>						
From Ouray to U.S. 40	391	4,268	4,659	501	6,762	7,263
<u>U.S. 40</u>						
From Utah 88 to Vernal	3,955	8,907	12,862	4,739	16,430	21,169
From Vernal to Jensen	5,356	7,620	12,976	6,542	14,158	20,700
From Jensen to County 262	2,348	3,411	5,759	2,868	6,319	9,187
From County 262 to Colo. Line	1,975	3,404	5,379	2,412	6,249	8,661
<u>County 262</u>						
From Utah 45 to U.S. 40	323	750	1,073	413	1,131	1,544
<u>Utah 45</u>						
From Vernal to County 262	NA	4,107	-	NA	8,486	-

Source: Uintah Basin Synfuels Development Final EIS

NA = Not Available



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Burning 5,000 to 10,000 acres of browse would result in short-term losses of forage and habitat, but both would be improved in the long term.

Mineral development and woodland harvest would result in short-term abandonment of wildlife habitats. These habitats would again be occupied following satisfactory reclamation.

Harvesting woodland products to meet demand would result in an overcut of mature trees and reduced productivity in the long-term.

Implementing watershed treatments on 10,000 acres would cause short-term increases in soil erosion, but reduce soil loss by 64,000 tons over the next 10 years.

Impacts to water quality, air quality, socioeconomics, and woodlands are the same as those described for interrelated projects.

Transportation impacts would not change from those impacts caused by baseline and interrelated projects as identified in Table 4-10.

### CUMULATIVE SUMMARY

The cumulative impacts to minerals would be the same as the BLM impacts previously discussed for this alternative.

Ecological condition would improve in 12 allotments, decline in 7 allotments, and remain static in 35 allotments. Approximately 36,400 acres would decline, 588,400 would remain static, and 490,500 would improve. An estimated 576 AUMs would be lost due to mineral development activities. Forage actions would result in the improvement of approximately 2 percent of the lands in fair ecologic condition to good condition.

The cumulative impacts upon forage resulting from both the interrelated projects and the BLM projects would not differ significantly from the impacts discussed in the BLM Impacts section. The Little Emma allotment would have a forage loss of 15 percent. The White River Bottoms allotment would have a forage loss of 21 percent. The State Line and Antelope Draw allotments would receive forage decreases of approximately two percent, and all other allotments would lose one percent, or less, of their available forage. Livestock active preference would be decreased by 910 AUMs, from 102,915 to 102,005 AUMs.

The cumulative wildlife impacts would be the same as the BLM Impacts previously discussed.

Sufficient undeveloped areas would be available to absorb the increase in dispersed activities such as sightseeing, camping and river floating. However, there would be a slight undetermined decrease in solitude in popular use areas and a slight undetermined increase in vandalism of both public and private property.

Annual depletions from the White River would increase by 167,000 acre-feet. Colorado's undetermined White River water entitlements, could further reduce the water supply available in Utah.



# RESOURCE PROTECTION ALTERNATIVE

## MINERALS

### Oil and Gas

#### BLM Impacts

Total annual production and associated disturbance would remain approximately the same as discussed in the Current Management Alternative and is summarized in Table 4-7.

A slight potential exists for oil and gas developments inadvertently being damaged or destroyed by oil shale construction activities such as mining equipment striking subsurface casing. Damage could generally be avoided if lease holders cooperate with each other when development occurs.

### Oil Shale

#### BLM Impacts

Approximately 80,000 bpd could be produced on two future oil shale tracts located within the priority management area (Figure 2-9). Approximately 1,100 acres would be disturbed (nonreclaimed) at any given time during the production phase.

The priority management area identified for underground oil shale development could limit management and industry flexibility in locating future oil shale tracts. In addition, priority management areas identified for in situ development would not be available and could result in an unquantifiable delay of a Federal in situ oil shale lease program.

### Tar Sand

#### BLM Impacts

Approximately 5,000 to 10,000 bpd could be produced on future hydrocarbon leases. Approximately 1,400 to 2,200 acres would be disturbed due to mining and related construction activities.

Special mitigating measures (lease categories) could affect tar sand development in a similar manner as discussed for oil and gas development. Certain areas (categories three and four) would not be available for tar sand development. However, by not developing these areas, conflicts with other resources would be avoided. The conflicts between the surface resources (reflected by the category designations) and the potential tar sand areas are shown in Table 4-11 (Tar Sand: Average Conflicts Between Category Designations and Potential Development Areas). Approximately 31 percent of public land within the three STSAs would not be

available for tar sand development (Table 4-11). In addition, tar sand within the Naval Oil Shale Reserve is withdrawn and reserved for the U.S. Navy (Figure 1-4).

### Gilsonite

#### BLM Impacts

Production levels and associated surface disturbance would remain the same as discussed in the Current Management Alternative.

Unleased gilsonite veins are known to exist within priority management areas for oil shale. Some of these veins could be eliminated from potential development by mining activities, spent shale disposal areas, retention dams and reservoirs, plant sites, etc.

### Sand and Gravel

#### BLM Impacts

Because no additional areas would be opened to sand and gravel development, no environmental impacts to Federal land within the BCRA would occur. However, demand of 10 to 15 acres of sand and gravel material sites, due to BLM implemented actions, could occur. Sand and gravel products would have to be derived from a non-Federal source within the BCRA or from lands outside of the BCRA.

### Building Stone

#### BLM Impacts

No environmental impacts would occur because collecting areas would be closed.

The public would have to use other types of building stone from areas outside the BCRA. No similar substitute sources are available for this type of stone.

## RIGHT-OF-WAY CORRIDORS

#### BLM Impacts

Under this alternative, rights-of-way within designated corridors could affect 46,000 acres (Figure 2-11). Major resource conflicts would generally be avoided but could still occur in certain areas and are discussed in the affected resource section (Appendix 9, Utility Corridors and Segments by Alternative). Site specific environmental documentation would be prepared for construction within the 150 miles of proposed corridors when specific right-of-way applications are received.



Table 4-11

## Tar Sand: Acreage Conflicts Between Category Designations and Potential Development Areas

STSA		Resource Protection			Category 3 No Surface Occupancy
		Category 1 Standard Regulations	Category 2 Special Stipulations	Category 3 No Surface Occupancy	
PR Spring	Low Potential	11,000	33,000	32,000	
	Moderate Potential	15,000	57,000	35,000	
Hill Creek	Low Potential	4,000	12,000	0	
	Moderate Potential	3,000	1,000	0	
Raven Ridge	Low Potential	9,000	4,000	0	
	Moderate Potential	1,000	0	0	
Total		43,000	107,000	67,000	
Commodity Production					
PR Spring	Low Potential	72,000	3,000	0	
	Moderate Potential	107,000	1,000	0	
Hill Creek	Low Potential	16,000	0	0	
	Moderate Potential	4,000	0	0	
Raven Ridge	Low Potential	13,000	0	0	
	Moderate Potential	1,000	0	0	
Total		213,000	4,000	0	
Balanced Use					
PR Spring	Low Potential	38,000	13,000	25,000	
	Moderate Potential	58,000	47,000	2,000	
Hill Creek	Low Potential	8,000	8,000	0	
	Moderate Potential	4,000	0	0	
Raven Ridge	Low Potential	9,000	4,000	0	
	Moderate Potential	1,000	0	0	
Total		118,000	72,000	27,000	



### FORAGE

#### BLM Impacts

##### Blue Mountain Locality:

Authorization of 3,725 AUMs for livestock and 2,413 AUMs for wildlife would result in an improvement in ecological condition in five of the six allotments in this locality. Only the Cub Creek allotment would remain in a static ecological condition (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 29,900 acres (79 percent) would improve and the remaining 8,100 acres would remain in a static ecological condition; no range would decline in condition. The net improvement would be a change of approximately 10 percent in ecological condition class, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvement in plant vigor and ecological trend would occur primarily on mountain loam and mountain stony loam sites, as well as floodplains and riparian areas. Sagebrush would remain static or decline by a slight (unquantifiable) amount. The improvement in ecologic trend would result from deferment of spring livestock use (five allotments) and decreases of livestock use in floodplains and riparian areas (Green River allotment). The total livestock decreases would amount to approximately 2,110 AUMs (Appendix 5, Forage Actions by Alternative).

Forage allocated for deer would increase by 1,413 AUMs above the current allocated use of 1,000 AUMs for a total of 2,413 AUMs. This would be 1,004 AUMs less than the prior stable numbers objective (3,417 AUMs). By keeping the wildlife forage approximately 29 percent below the objective level and the livestock forage approximately 36 percent (2,062 AUMs) below active preference, the locality would be under allocated approximately 650 AUMs. This decrease in grazing pressure would result in a reversal in the range ecological trend from a decreasing to an increasing condition.

Development of four reservoirs, a spring, and one mile of pipeline within the Blue Mountain AMP, Green River, Stuntz Valley, and Point of Pines allotments, would allow better distribution of livestock and wildlife grazing.

Development of water in areas that have received light grazing pressure due to their distance from water, would be more efficiently utilized. Areas where grazing was previously concentrated due to the availability of water, would not be as heavily grazed. Reduced grazing pressure would result in improved ecological condition of the range.

Minerals development would result in a loss of 7 AUMs (Appendix 15, Forage Impacts).

##### Bonanza-Rainbow Locality:

Authorization of **29,277** AUMs for livestock, 1,390 AUMs for antelope, 600 AUMs for wild horses, and an unknown portion of 37,113 AUMs for deer would improve ecologic condition throughout this locality. Twenty-seven of the allotments would improve in ecological condition. Only two allotments (Walker Hollow and White River) would remain in a static condition (Appendix 14, Anticipated Trend in Ecological Conditions). Approximately 534,200 acres would show improving trend and 99,000 acres (16 percent) would remain static. No declines in overall ecological condition would occur in this locality. The net improvement would be 10 percent in ecological condition class, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvements in ecological condition would result from several actions. Decreasing livestock use from 37,352 AUMs to **29,277** AUMs would result in 22 percent fewer livestock than currently use the range. Deferment of livestock use during the critical spring growth period on 27 allotments would eliminate a demand of **6,832** AUMs, thus avoiding the impacts of spring grazing. The other two allotments (White River and Walker Hollow) would not have any spring grazing and also avoid the impacts of spring grazing. Improvement of riparian areas and floodplains would result from decreasing livestock use by 479 AUMs within the White River Bottoms allotment. Development of three springs, one guzzler, and 17 reservoirs, would distribute livestock, wildlife, and wild horses more evenly within 12 allotments. The distribution would allow better utilization of forage, as described in the Blue Mountain locality.

The proposed use of **29,277** AUMs would represent 48 percent of the original allocation. Due to the current level of nonuse (32,132 AUMs), this decrease would result in **8,075** fewer livestock AUMs (22 percent) below average use. These decreases would have significant economic impacts upon the livestock permittee's operations. Refer to the socioeconomic section under this alternative.

Competition for forage between deer in herd unit 26 and livestock would decrease by 255 AUMs on four allotments (Cocklebur, Jensen, Miners Gulch, and Powder Wash). Heavy grazing pressure would thus be eliminated in those areas. No competition for forage would occur in the remaining 25 allotments. Forage allocated for deer in the 1960's would be adequate.

Wild horses would be authorized 600 AUMs. That amount of forage would be available due to the 22 percent decrease in livestock AUMs. The ecological trend in the allotments used by wild horses (Antelope Draw and Seven Sisters), would not be altered by the wild horses.



## CHAP. 4 — RESOURCE PROTECTION ALTERNATIVE

Antelope would be given an 82 percent (628 AUMs) increase over the current use. This amount of forage would also be available due to the livestock decrease in AUMs. The ecological condition of the range would not be altered by the antelope.

Approximately 534 AUMs of forage would be lost through mineral developments in this locality (Appendix 15, Forage Impacts).

### **Book Cliffs Locality:**

Authorization of 15,412 AUMs for livestock, an unknown portion of 37,113 AUMs for deer, and an unknown portion of 14,681 AUMs for elk would improve ecological condition on five allotments (Atchee Ridge AMP, Horse Point AMP, McClelland, Sweetwater AMP, and Winter Ridge AMP). Two allotments (Book Cliffs Pasture and West Water Point) would remain in static condition (Appendix 14, Anticipated Trend in Ecological Conditions). Approximately 269,900 acres would show improving ecological trend and 34,200 acres (13 percent) would show a static condition. No declines in overall ecological condition would occur in this locality. The net improvement to ecological condition class would be a change of 5 to 10 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvements in ecological condition would result from several actions (Appendix 5, Forage Actions by Alternatives). Decreasing livestock use from 17,351 AUMs to 15,412 AUMs would result in 11 percent fewer livestock than currently use the range. The four allotments showing improvement would operate under grazing systems which would rotate grazing use to avoid the impacts of spring grazing upon plant vigor. The allotments remaining static would continue season long use.

A total of 1,317 AUMs of livestock use would be deferred from spring use in these allotments. Seven reservoirs, ten springs, and five guzzlers would be developed in the Sweetwater AMP, Winter Ridge AMP, West Water Point, Atchee Ridge AMP, and Horse Point AMP allotments, resulting in improved livestock distribution. Better forage utilization would result and grazing pressure would be reduced. Improvement of riparian areas and floodplains would result from decreasing livestock use by 18 AUMs within the Sweetwater AMP allotment.

The proposed use of 15,412 AUMs would be a 33 percent change from the original livestock forage allocation. Approximately 5,823 AUMs nonuse has been taken in this locality, so the actual decrease realized on-the-ground would be about 1,939 AUMs (11 percent). These decreases would have significant impacts upon the permittee's livestock operations. Refer to the socio-economic section of this alternative.

Wildlife would benefit from a 751 AUM livestock decrease on McCook Ridge (included in the overall livestock decrease). This would provide more forage for wildlife and eliminate possible competition for forage between livestock and wildlife. It would also avoid the impacts to plant vigor that would result from heavy grazing in areas of competition.

Wild horses would be removed from this locality. The forage that they consume (108 AUMs) would be available for both livestock and wildlife, because the use by wild horses was never allocated.

Approximately 306 AUMs for livestock and 297 AUMs for wildlife would be lost due to mineral developments (Appendix 15, Forage Impacts). These losses would be offset by the proposed land treatments which would produce 483 AUMs for livestock and 1,225 AUMs for wildlife.

Control burning 15,000 acres in the Atchee Ridge AMP, Horse Point AMP, Sweetwater AMP, and Winter Ridge AMP allotments, would eliminate or decrease decadent and overmature shrubs with grasses and younger, more palatable shrubs. Within one to two years after burning, the amount of forage would be increased up to 250 percent.

Clearcutting woodlands in the Sweetwater AMP and the Horse Point AMP allotments would open the woodland canopy and enable grasses, forbs, and shrubs to increase in density and vigor. The forage response would be similar to areas that would be burned.

### **Hill Creek Locality:**

Authorization of 5,045 AUMs for livestock, 2,340 AUMs for wild horses, an unknown portion of 37,113 AUMs for deer, and an unknown portion of 14,681 AUMs for elk, would improve ecological condition in all 12 allotments within this locality (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 112,600 acres would improve in ecological condition, 27,300 acres would remain in static condition, and no acreage would decline in condition. The net improvement in ecological condition class would be a change of less than 5 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvements in ecological condition would result from several actions (Appendix 5, Forage Actions by Alternatives). Deferment of grazing during the critical spring growth period would be required on eight allotments, for a decrease of 839 AUMs. Formal allocation of use to provide for wild horses would be made on eight allotments (Lower Showalter, Oil Shale, Pack Mountain-Wild Horse, Tabyago, Upper Showalter, Ute, and West Tabyago). A total of 2,340 AUMs would be taken from livestock nonuse to support wild horses. Grazing use (521 AUMs) would be retired on two allotments (Birchell and Green River AMP) to protect key floodplain and riparian areas. An adjustment of approxi-



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mately 3,849 AUMs on nine allotments would be taken to reduce the impact of historic heavy grazing in livestock concentration areas (areas adjacent to water, trail areas, bedgrounds, etc.). Refer to Appendix 5 (Forage Actions by Alternative).

No use has been made on the Oil Shale allotment; however, if the permittee applied for use, up to 50 percent of active preference (549 AUMs) would be allowable. It is assumed this would continue, hence these AUMs are omitted from the total AUMs available for the locale.

Total impact to livestock use would amount to a decrease of 1,397 AUMs from average use (22 percent) and 7,586 AUMs below active preference. This level of livestock use would result in a significant economic impact upon the permittees. Refer to the socioeconomic section of this alternative.

Development of three reservoirs on two allotments (Pack Mountain-Wild Horse and Tabyago) would improve livestock and wild horse distribution by reducing heavy grazing use and increasing ecological condition.

Minerals developments would eliminate 37 AUMs of forage (Appendix 15, Forage Impacts). This loss would be absorbed by nonuse.

BLM actions would result in improvement in ecological condition in 49 allotments and a static condition in five allotments. No declines in ecological condition would occur on an allotment basis. Approximately 1,086,600 acres would improve, and 168,600 acres would remain in static ecological condition.

### WILDLIFE/WILD HORSES

#### BLM Impacts

The utilization of 55,597 AUMs of existing forage from BLM lands by big game species, an additional 1,325 AUMs from Dinosaur National Monument, and 2,940 AUMs by wild horses, would be sufficient to support prior stable wildlife numbers in deer herd unit 28A, elk herd unit 21, and near prior stable numbers in deer herd unit 26 and increased wild horse populations. This level of forage utilization would meet or nearly meet (depending upon locality) the projected requirement of the UDWR big game population goals. The allocation level would also meet the forage requirement necessary to support the increased Vernal District wild horse population objectives at the Bonanza and Hill Creek locations. ***The additional forage for wild horses would be available from the original AUMs allocated to wildlife in the 1965 range adjudication (see Table 2-1), livestock reductions, and land treatments.*** Due to small herd size and low reproductive success, the Winter Ridge wild horse herd would cease to exist.

The distribution of the various wildlife species would be: 1,114 antelope (700 at Bonanza-herd unit 7, 414 at East Bench); 20,300 mule deer (1,800 at Blue Mountain-herd unit 26, 18,000 at Book Cliffs-herd unit 28A); 2,300 elk (all located at Book Cliffs-herd unit 21); 245 wild horses (50 at Bonanza, 195 at Hill Creek).

Projected oil and gas development would have the same effect as previously described under the Current Management Alternative.

Oil shale, tar sand, sand and gravel, and gilsonite development would not significantly affect big game or wild horse populations or crucial habitat. Any such mineral development would occur outside the identified crucial habitat areas.

***Impacts to upland game bird and waterfowl would be the same as was described under the Current Management Alternative.***

Wildlife habitat would improve as a result of reduced livestock grazing in certain key areas, such as the McCook Ridge winter area (deer herd 28A and elk herd 21) and all of the Blue Mountain summer area (deer herd 26).

Annual depletion of 28,000 acre-feet of water from the White River could jeopardize the continued existence of two endangered fish species, the Colorado squawfish and humpback chub, and one species which is a candidate for listing, the razorback sucker. No impacts to the species would occur if the water were purchased from the White River Dam Project (WRDP) because of agreed upon conservation measures in the biological opinion for that project (FWS 1982). However, the White River Dam Project could not supply water for all projects proposed in the UBS Development EIS and this additional oil shale development. If the water is not purchased from WRDP, the determination of the degree of impact would be determined in the Fish and Wildlife Service's Biological Opinion.

### WOODLANDS

#### BLM Impacts

By 1995, demand resulting from BLM projects would be approximately 900 cords per year.

Restrictions imposed upon woodland management by other resource programs would limit the allowable cut to 3,470 cords per year, produced from 32,700 acres of woodland. About 11,600 acres would be eliminated from woodland management to protect severe and critical erosion areas. Two hundred acres would be lost to rights-of-way placed in utility corridors, 1,400 acres used for tar sand development, 100 acres lost to wildfires (over a ten-year period), and 1,200 acres would be set aside to protect crucial wildlife habitat on



Lower McCook Ridge. In total, 14,500 acres of woodlands, capable of contributing 1,350 cords of firewood to the annual allowable cut, would not be available for harvest by wood cutters.

### RECREATION

#### BLM Impacts

By 1995, and as a result of BLM projects, big game hunting opportunities would increase by **4,060** visitor days. The demand for all other recreation activities would increase visitor days by 2,700. However, approximately 575 visitor days would be foregone as a result of proposed ORV closures and restrictions.

There would be no effect on recreation by discontinuing protection of two campsites because these sites have received almost no visitor use, future development potential is extremely low, and alternate dispersed camping sites would be available.

To be consistent with the Uintah and Ouray Indian Reservation's land use plan, 14,500 acres of land in the Hill Creek area contiguous to the Reservation boundary, would be closed to ORV travel. Decreased grazing on spring ranges and elimination of grazing in riparian zones, would enhance visual resources of the landscape and reduce conflict between livestock and recreationists along the White and Green Rivers.

Proposed utility and transportation corridors would cross 1,800 acres or four percent of the visual resource management Class II area and 2,840 acres or four percent of Class III land. Certain types of rights-of-way placed in the corridors would not comply with the visual standards of these classes.

Impacts to the visual resource would be minimized by consolidating the land disturbing activities to designated corridors. This would prevent the proliferation of construction scars and man-made intrusions from randomly crisscrossing the landscape.

The oil shale priority use areas contain four percent of visual resource Class II land, where development would degrade visual resources by creating contrasts with the natural landscape. The remainder of the area, 96 percent, contains only Class IV where impacts would be minimal as surface disturbance would be noticeable, but more acceptable in areas with low scenic qualities. All areas where tar sand development would be allowed contain only Class IV areas and again where development occurs, changes to the natural landscape may attract attention.

The effects of retaining the Book Cliffs Mountain Browse Natural Area would be the same as described for the Current Management Alternative.

### FIRE MANAGEMENT

#### BLM Impacts

Full suppression of wildfire would protect approximately 84,500 acres throughout the BCRA, safeguarding private property, and preventing the spread of wildfire to non-Federal lands.

Over the next ten years, approximately 15,000 acres would be prescribed burned, providing additional wildlife habitat and forage. Under this alternative, prescribed burns would not be utilized to enhance livestock forage. The burn projects would include mature sagebrush, canyon bottoms, mature browse stands, old chainings and burns that were becoming overgrown. Prescribed burns would set back the ecological condition to earlier successional stages. Natural regeneration, mechanical re-seeding, and/or tubeling transplants would improve forage quality and provide additional areas of habitat for wildlife species. "Edge effect" would be greatly improved in all these projects.

Where control would be difficult or where other resource values are not at risk of being damaged, a program of modified wildfire suppression would be utilized on 980,500 acres. At the discretion of the Resource Area Manager, wildfires could be allowed to burn until self extinguished, or until significant resource values are jeopardized. Using modified suppression, a much larger acreage could be allowed to burn, increasing the beneficial effects that fire would have on vegetation, thereby providing additional forage and habitat for wildlife. When fire conditions would cause damage to desirable resource values, and to minimize the adverse impacts of wildfire, suppression could then be used.

### WATERSHED

#### Water Use

#### BLM Impacts

Development of two additional oil shale tracts would annually require approximately 28,000 acre-feet of water for underground mining (Table 4-12, Water Requirements for Energy Development). This amounts to six percent of the average annual flow of the White River. Less water would be required if modified in situ techniques are employed. If the water cannot be purchased from other water users with valid rights, development could be delayed or prevented since the White River is essentially closed to further appropriation.



Table 4-12  
Water Requirements for Energy Development By Alternative  
(acre-feet/year in thousands)

Project	Maximum White <sup>a</sup> River Development	Maximum Green <sup>a</sup> River Development
Total of Eight Uintah Basin Synfuels Projects	<u>37</u>	<u>32</u>
Related Development		
a. Bonanza Power Plant	0	22
b. White River Shale (Tracts Ua & Ub)	28	28
c. Municipal/Industrial <sup>b</sup>	20	20
d. Agricultural <sup>c</sup>	20	20
Subtotal	<u>68</u>	<u>90</u>
<u>Estimated Ute Tribe</u>	<u>62</u>	<u>0</u>
Baseline without additional oil shale development <sup>d</sup>	<u>167</u>	<u>122</u>
RESOURCE PROTECTION		
Two oil shale tracts	28	28
<u>TOTAL for Resource Protection Alternative</u>	<u>195</u>	150
COMMODITY PRODUCTION		
Four oil shale tracts	56	56
<u>TOTAL for Commodity Production Alternative</u>	<u>223</u>	178
BALANCED USE (Proposed Plan)		
Two to four oil shale tracts	28-56	28-56
<u>TOTAL for Balanced Use Alternative</u>	<u>195-223</u>	<u>150-178</u>

<sup>a</sup>Figures can not be totaled horizontally because the White River and Green River are alternative sources for several of the projects.

<sup>b</sup>Estimated increases of water use from projected population increases and from other industrial increases.

<sup>c</sup>Estimated requirement based upon agricultural trends.

<sup>d</sup>This baseline is assumed to exist under the Current Management Alternative. These water requirements have been identified in previous EIS's, although most of the projects are only planned. This plan will not effect the approval or outcome of these projects. The proposed plan and alternatives show additional water requirements which could result from BLM actions.



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### Water Quality

#### BLM Impacts

Prohibiting surface occupancy within public water reserves and within 600 feet of perennial streams would adequately protect water quality of these water sources. Closed and limited ORV travel designations and restrictions of mineral development in severe and critical erosion areas, would result in slight, unquantifiable improvements in water quality.

The Detailed Development Plan for the White River Shale Project assumes no wastewater discharge from tracts U-a and U-b and, therefore, no impacts to water quality (Bechtel Petroleum, Inc. 1981). Using the same assumption for any additional oil shale leases also leads to the conclusion of no impact to water quality. However, the wastewater would contain high concentrations of ammonia, sulfide, phenols, oil and dissolved solids, and has the potential to pollute both groundwater and surface water if any seepage or accidental discharge occurs. Based on depletion information in the UBS Development EIS, diverting 28,000 acre-feet per year from the White River would increase total dissolved solids concentration at the mouth of the White River by 2.6 mg/l and by 1 mg/l at Imperial Dam. This increase is less than 1 percent.

### Soils

#### BLM Impacts

Surface disturbance of 1,400 to 2,200 acres for tar sand recovery, 800 acres for oil shale mining, 1,200 to 3,800 acres for oil and gas production would increase soil erosion. Sediment yields from reclaimed surface mines were 300 to 600 percent higher than for undisturbed sites (Lusby and Toy 1976). In the Piceance Basin of Colorado, increases in sediment yield of 5.8 to 11.6 tons per acre per year during initial construction of oil shale mining sites and 2.9 tons per acre per year after construction were reported (Frickel et al. 1975). Assuming a tripling of soil loss from disturbed sites in the BCRA, soil loss in the next 10 years would be an additional 9,900 to 19,700 tons.

Closed and limited ORV travel designations and restrictions on mineral development in severe and critical erosion areas would reduce soil loss by an unquantifiable amount. Although this additional soil loss would be less than one percent of the current soil loss from the entire BCRA, localized impacts could be severe in gully formations and areas with reduced vegetation cover.

Confining major rights-of-way to 23.8 miles of corridors totalling 9,000 acres in severe and critical erosion condition, would result in fewer acres disturbed and de-

creased soil erosion.

Constructing up to 5,555 detention-retention dams on 111,100 acres in severe and critical erosion condition, would reduce soil loss by 711,000 tons over the next 10 years. The short-term increase in wind and water erosion resulting from dam construction would be insignificant.

No other BLM actions would significantly affect soils.

### Floodplains

#### BLM Impacts

Limiting or restricting livestock from 5,950 acres, closing 14,200 acres to ORV use, and allowing no surface occupancy for mineral development in floodplains, would result in an unquantifiable improvement in floodplain condition.

### Boulevard Ridge Study Area

#### BLM Impacts

Impacts resulting from BLM actions are the same as discussed under the Current Management Alternative.

## LAND TENURE ADJUSTMENT

#### BLM Impacts

Up to **8,700** acres could be acquired by BLM, if they become available (Figure 2-14). The identified lands are important riparian and wildlife habitat; their acquisition would enhance the management of wildlife habitat in the BCRA. Site specific environmental analyses would be done prior to acquisition.

## AIR QUALITY

#### BLM Impacts

Impacts to air quality of a new Federal oil shale lease producing 80,000 bpd were assumed to be similar to those previously analyzed for (Dietrich et al. 1983). The location and assumed technology were similar. No NAAQS, or PSD, or Colorado Category I increment violations from new Federal leasing alone, would be expected.

The visibility analysis indicated no discernible visibility degradation at Dinosaur National Monument. Yellow-brown atmospheric discoloration could occasionally be visible near the new lease developments.

Tar sand development of 5,000 to 10,000 bpd would cause little impact to air quality or visibility, except for



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potential local exceedances of the Class II TSP increments near surface mines and unpaved roads (Aerocomp 1984).

### SOCIOECONOMICS

Methodologies and computations that were used to estimate economic impacts are discussed in Appendix 12: (Methodology for the Economic and Social Analysis).

#### Economic Conditions

##### BLM Impacts

The effect of implementing the Resource Protection Alternative on oil and gas development would be expected to be similar to that discussed for the Current Management Alternative. Employment and personal income opportunities for local residents would remain essentially the same, with only minor variations.

Production from oil shale and tar sand leasing would change local employment, population, infrastructure, and fiscal conditions. The production scenario, labor force requirements, settlement patterns, and impact analyses from oil shale developments, are modeled after the "UBS Socioeconomics Technical Report" except, that construction would not be expected to begin until 1987. Full production would be reached by 1995 (Utah E.O. 1983). Similarly, the production scenario, labor force requirements, settlement patterns, and impact analysis from tar sand developments is modeled after the "Regional Analysis of Tar Sand Developments in Utah Socioeconomic Technical Report" (BLM 1983h).

By the year 1995, assumed production and timing with implementation of this alternative, would increase the regional population by 16,814 people. None of the counties or communities would accommodate a greater than 10 percent annual growth rate. Including baseline population projections, Uintah County and the communities and surrounding areas of Vernal and Rangely, would at some time, experience a greater than five percent annual growth rate. The BCRA would also experience a greater than five percent annual growth rate. The population increase would come in the form of work camps temporarily housing some of the construction work force. If a smaller proportion of the construction work force were to stay in the work camps, then the surrounding communities would experience a greater population peak while long-term population projections would remain unchanged.

Both the Uinta Basin Synfuel EIS and the Utah Combined Hydrocarbon Leasing Regional EIS have assumed that tar sand development in the PR Spring STSA would result in a new community being established in the Westwater area. A new community would

reduce social and economic impacts that other nearby communities would realize if the Westwater community was not developed. Whether or not a new community would actually be established, is uncertain.

Oil shale and tar sand developments would directly increase regional employment and income earned in the mining and construction sectors. The induced and indirect effects of oil shale and tar sand activities would increase employment and income in other sectors as well, particularly the retail and service sectors. The increased relative importance of the high-paying mining and construction sectors and the increased demand for workers in other sectors would increase the regions per capita income by an unknown amount.

In areas where mineral resources overlap (e.g. oil shale, gilsonite, tar sand, oil and gas) only one resource could be developed at a time. In certain cases, the remaining mineral resources could not be developed at all. Therefore, unquantified employment and personal income opportunities associated with development of these other resources would be delayed, or not realized at all. These unquantified losses would be insignificant.

Gilsonite, metal mining, and miscellaneous mineral activities would continue essentially unchanged from that discussed in the Current Management Alternative.

Under this alternative, sand, gravel and building stone collection would not be allowed in the BCRA. Employment and personal income loss would be minor as other areas outside the BCRA could accommodate the projected demand.

Not allowing gravel or building stone collection in the BCRA would force those who would have used the BCRA (currently 25 to 50 people/year) to travel up to 50 additional miles round trip to obtain these materials. The lack of commercial activity in the area suggests that no company, employment, or income would be significantly affected.

The actions proposed by BLM would produce increased demands on infrastructure within the region. Table 3-6 projects the needs through the year 2000. These needs can be estimated for each community by comparing the projected population increases of that community (Table 4-13) with the projected population increases of the region (Table 4-14) and applying the resulting proportion to the projected infrastructure needs of the region (Table 3-6).

Compared to their existing use, 20 cattle operators would have 16 percent less available BCRA forage, resulting in an average \$25,214 decrease in returns above cash costs, 3 percent less than what they presently earn.

Compared to their existing use, 18 sheep operators would have 19 percent less available forage, resulting



Table 4-13

Population Projections  
for  
Resource Protection Alternative

Area	1982			1985			1990			1995			2000		
	Base	Base	BLM	Other	Base	BLM	Other	Base	BLM	Other	Base	BLM	Other	Base	Other
Duchesne	15,273	17,778	0	4,965	18,632	1,179	10,226	18,684	1,900	13,082	18,929	1,900	15,723		
Roosevelt CCD	11,827	13,695	0	348	15,057	1,169	3,019	15,005	1,881	3,122	14,636	1,881	3,799		
Roosevelt	4,678	5,416	0	244	5,955	814	2,057	5,934	1,311	2,106	5,789	1,311	2,599		
Myton	609	705	0	12	775	35	103	773	57	105	754	57	130		
Other	6,540	7,514	0	92	8,327	318	859	8,298	513	911	8,093	513	1,070		
Other	3,446	10,204	0	4,617	3,575	12	7,207	3,679	19	9,960	4,293	19	11,924		
Uintah	24,170	25,730	0	18,940	29,326	8,020	35,679	29,863	12,923	45,196	28,985	12,923	53,500		
Uintah-Ouray	4,737	5,061	0	40	5,699	160	726	5,730	258	698	5,565	258	757		
Ballard	678	775	0	20	966	80	315	976	129	297	926	129	619		
Other	4,059	4,286	0	20	4,733	80	411	4,754	129	401	4,639	129	138		
Vernal	19,417	20,653	0	1,413	23,611	5,774	10,242	24,117	12,406	12,154	23,404	12,535	14,755		
Vernal	8,549	9,291	0	565	11,065	2,566	4,148	11,369	5,557	4,912	10,941	5,686	5,972		
Other	10,868	11,362	0	848	12,546	3,208	6,094	11,389	6,849	7,242	12,463	6,849	8,783		
Bonanza	16	16	0	178	16	2,086	1,575	16	259	0	16	130	0		
Moffat-Rio Blanco	23,934	24,355	0	146	28,345	281	1,738	27,646	425	2,016	28,144	452	2,403		
Dinosaur	451	501	0	64	405	124	810	425	187	943	437	187	1,124		
Rangely	3,235	3,193	0	82	3,993	157	928	3,805	238	1,073	3,962	238	1,279		
Grand	8,100	9,850	9	691	10,570	155	834	10,324	1,156	915	9,676	441	919		
Thompson		380	9	691	366	155	834	366	1,156	915	365	441	919		
Westwater		38	9	691		155	834		1,156	915		441	919		
Mesa			3			57			428			163			

CCD: Census County Division



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in a \$138,564 decrease in returns above cash costs, 7 percent less than what these operators presently earn.

The spring (March through May) exclusions of livestock would be of particular concern to livestock operators, since they have few options with which to respond to these exclusions. Most operators would have to either purchase feed to replace the lost forage, shift forage that is normally used in other months to this period, or reduce their herd size so that the forage produced from their base property would last longer. The spring exclusions would force sheep operators who had been lambing on public land, to lamb on their base property.

Replacing forage lost through spring exclusions with hay would represent a worst-case analysis. Feeding hay during the spring may adversely affect livestock weight gains and reduce gross revenues. If the feeding were to be done on alfalfa-producing property during the spring, alfalfa yields could be affected, and bloating problems could arise. However, reducing the herd size would usually be a more economical response to spring exclusions than purchasing hay (Godfrey 1981).

Under this alternative, 20 of the 21 cattle operators would be excluded from using forage during the spring, thereby losing the spring use of approximately **3,389** AUMs. The cost of replacing this forage with alfalfa produced at \$60 per ton would be **\$203,340**. Eighteen of the 18 sheep operators would receive significant spring exclusions, thereby losing the use of approximately 6,352 AUMs during the spring. The cost of replacing this forage with alfalfa at \$60 per ton would be \$381,120. The number of livestock operators affected to varying degrees estimated worst-case impacts are shown in Table 4-15 and 4-16, respectively.

Because there are other options an operator could choose other than a reduction in AUMs of use on public lands, this option was not considered in estimating economic impacts.

Total impacts would not change if the proposed mineral developments were concentrated in several allotments rather than spread among all allotments with mineral development potential, as was assumed in the analysis. With concentrated mineral developments, several operators would be affected to a slightly greater extent than shown in Table 15.

Any decrease from active preference could affect operators wealth. Under this alternative, total long-term grazing privileges would be decreased by **49,456** AUMs from active preference. At a market value of \$60 per AUM for BLM grazing permits, total operator wealth could decline by as much as **\$2,967,360**, a 10 percent base property value reduction.

Because total rancher income is expected to decrease under this alternative, the rancher's ability to

repay loans should also decrease.

Projected population increases as the result of potential oil shale and tar sand development would result in increases in recreational activities and activity days. These BLM actions would result in an increase of 2,700 recreation days and an increase in revenue to the local economy of \$121,500. This increase would be 37 percent higher than present BCRA levels.

BLM wildlife management actions would result in increased long-term big game populations and would result in more hunter days; thus, an increase in expenditures, income, and employment. With this large increase in wildlife numbers, hunters may be attracted to the BCRA from more areas outside of the county. More hunters from Salt Lake City and Denver may decide to hunt in the resource area. It could mean an increase of up to 4,060 hunter days and an increase in revenue to the local economy of \$182,700. The increase would have significant long-term beneficial impacts to the recreation sector since they represent a 60 percent increase in BCRA recreation generated revenues.

### Social Conditions

The region's traditional farming and ranching communities would continue to lose their cultural identity. Political, social, and economic diversity would continue to increase.

Short-term social impacts to existing communities would be significantly reduced by the construction of work camps and a new community in Grand County. However, the worker composition and probable work camp conditions would lead to an undesirable quality of life for those living in the work camps. The new sterile community would eventually become more like surrounding communities.

Social impacts to native-Americans would depend on the degree that they would benefit from the increased economic opportunities. Based on past experience, the existing disparity between Indian and non-Indian income and living conditions would not change. Indian out migration would continue. The projected influx of newcomers unfamiliar with American Indians could further increase trespass and poaching problems. Also, tribal customs and rituals may fade as Indians become further assimilated with the increasingly diverse population around them.

## TRANSPORTATION

### BLM Impacts

By 1995, BLM actions would result in increased traffic volumes on the four major highways in the area. The affected highways and the estimated average daily traf-



Table 4-14

Resource Protection Alternative  
Summary of Regional Socioeconomic Impacts  
Resulting from BLM Actions

Socioeconomic Development Category	Change From Projected Baseline			
	1985	1990	1995	2000
Population Growth				
Total	-	9,830	16,814	16,126
School Age	-	2,024	4,162	4,611
Employment Growth	-	4,983	7,807	6,556
Household Growth	-	3,411	5,412	4,414
Infrastructure Requirement				
Housing				
Single family	-	2,050	3,239	2,650
Multi-family	-	517	813	667
Mobile homes	-	857	1,353	1,107
Education				
Students	-	2,024	4,162	4,611
Classrooms	-	86	170	188
Teacher	-	86	170	188
Health Care				
Hospital beds				
General care	-	25	39	35
Long-term care	-	12	19	24
Medical personnel				
Doctors	-	12	16	14
Dentists	-	12	14	13
Nurses	-	21	32	31
Public health nurses	-	9	10	9
Medical health care				
Clinical psychologists	-	9	9	8
Methal health workers	-	9	9	8
Public Safety				
Law Enforcement				
Police officers	-	12	19	35
Patrol cars	-	12	19	35
Jail space (sq. ft.)	-	4,850	8,418	7,942
Juvenile holding cells	-	9	9	9
Fire Protection				
Fire flow (gpm)/ duration (hr.) <sup>a</sup>				
Emergency Medical Services				
Ambulances	-	9	10	9
Emergency medical technicians	-	65	70	61



Table 4-14 (Continued)

Resource Protection Alternative  
Summary of Regional Socioeconomic Impacts  
Resulting from BLM Actions

Socioeconomic Development Category	Change From Projected Baseline			
	1985	1990	1995	2000
Utility Service Demands				
Water System				
Connections	-	3,130	5,436	5,127
Supply (10 <sup>6</sup> gal./yr.)	-	1,828	3,174	2,994
Storage (10 <sup>6</sup> gal./yr.)	-	917	1,588	1,498
Treatment (10 <sup>6</sup> gal./yr.)	-	1,828	3,174	2,994
Sewage System (10 <sup>6</sup> gal./yr.)	-	352	614	580
Solid Waste Acres/Yr.		2.1	3.6	3.4

Source: BLM 1983h.

<sup>a</sup>Fire protection measured in fire flow (gpm)/duration (hr.) cannot be aggregated across the affected counties.



TABLE 4-15

Number of Operators Affected Under the Resource  
Protection Alternative and Degree of Impact

	Percent Increase From Existing Use and Revenues			Not Affected	Percent Decrease From Existing Use and Revenues		
	50-100	11-50	1-10		1-10	11-50	51-100
Public Rangeland Forage					8	31	
Operator Returns Above Cash Cost					28	10	1

Note: Changes are based on average use over the past 3 years.

TABLE 4-16

Summary of Short-Term and Long-Term Economic Impacts  
to Livestock Operators in Dollars

	Current Situation	Average Resource Protection Case	Worst Resource Protection Case
<u>Cattle Operators</u>			
Gross Revenue	\$2,415,282	\$2,397,835	
Total Cash Cost	1,441,458	1,449,225	
Returns Above Cash Cost	973,824	948,610	\$ 906,224
Returns to Labor and Investment	526,204	503,541	459,591
<u>Sheep Operators</u>			
Gross Revenue	\$3,585,258	\$3,452,004	
Total Cash Cost	1,509,804	1,515,114	
Returns Above Cash Cost	2,075,454	1,936,890	\$1,925,653
Returns to Labor and Investment	1,719,522	1,582,344	1,569,926



Table 4-17

Resource Protection Alternative  
Cumulative Infrastructure Needs  
BLM and Interrelated Projects

Socioeconomic Development Category	1985	1990	1995	2000
Population Growth				
Total	27,282	59,098	79,804	91,103
School Age	4,619	11,296	20,207	35,217
Employment Growth	15,817	30,591	36,010	38,609
Household Growth	8,264	18,593	23,782	25,575
Infrastructure Requirement				
Housing				
Single family	4,958	11,158	14,261	15,347
Multi-family	1,239	2,794	3,569	3,842
Mobile homes	2,066	857	5,946	6,398
Education				
Students	4,619	11,296	20,207	27,776
Classrooms	185	456	811	1,115
Teacher	185	456	811	1,115
Health Care				
Hospital beds				
General care	59	34	136	185
Long-term care	12	42	69	81
Medical personnel				
Doctors	16	42	53	59
Dentists	14	36	45	51
Nurses	46	105	138	157
Public health nurses	6	19	24	25
Medical health care				
Clinical psychologists	3	13	13	13
Methal health workers	4	15	15	17
Public Safety				
Law Enforcement				
Police officers	54	110	144	185
Patrol cars	54	110	144	185
Jail space (sq. ft.)	13,592	29,526	39,645	45,297
Juvenile holding cells	5	16	18	19
Fire Protection				
Fire flow (gpm)/ duration (hr.) <sup>a</sup>				
Emergency Medical Services				
Ambulances	6	19	24	25
Emergency medical technicians	38	133	165	171



Table 4-17 (Continued)

Resource Protection Alternative  
Cumulative Infrastructure Needs  
BLM and Interrelated Projects

Socioeconomic Development Category	1985	1990	1995	2000
Utility Service Demands				
Water System				
Connections	8,769	18,975	25,584	29,229
Supply (10 <sup>6</sup> gal./yr.)	5,121	11,082	14,941	17,069
Storage (10 <sup>6</sup> gal./yr.)	2,561	5,544	7,474	8,535
Treatment (10 <sup>6</sup> gal./yr.)	5,121	11,082	14,941	17,069
Sewage System (10 <sup>6</sup> gal./yr.)	992	2,144	2,894	3,307
Solid Waste Acres/Yr.	5.9	12.4	16.8	19.1

Source: BLM 1983h.

<sup>a</sup>Fire protection measured in fire flow (gpm)/duration (hr.) cannot be aggregated across the affected counties.



fic increases are shown in Table 4-18. Highway levels of service would not change. A slight, unquantifiable increase in traffic accidents would be expected to occur.

### UNAVOIDABLE ADVERSE IMPACTS

Development of mineral resources such as oil and gas, tar sand, and oil shale would result in surface disturbance and modification of topography.

Forage utilized by wildlife, livestock, and wild horses would be lost as a result of various mineral and mineral-related developments. If this alternative is selected, livestock AUMs would decrease partially due to increasing wildlife numbers.

Wildlife and wild horses displaced by mineral development into surrounding areas of suitable habitat could be subject to crowding, stress, and competition for forage, water, and cover. In addition, an unquantifiable amount of habitat surrounding each oil and gas well would be abandoned by most wildlife species. However, restrictions on mineral development in deer and elk fawning and calving areas would lessen these impacts.

The White River could be depleted of 28,000 acre-feet of water per year for additional energy development. Salinity would increase at the mouth of the White River by 2.6 mg/l and at Imperial Dam by 1 mg/l.

Approximately 9,900 to 19,700 tons of soil would be lost as a result of surface-disturbing activities related to mineral development.

TSP concentrations would increase with a greater probability of exceeding PSD Class II limits. Atmospheric discoloration may occasionally be visible near synthetic fuel facilities and power plants, at Dinosaur National Monument, and the Uintah and Ouray Indian Reservation.

Overhead powerlines and communication lines within the designated utility and transportation corridors may not comply with visual resource management Class II and Class III areas.

### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Based on present technology, minerals mined and subsequently consumed, or left underground as unrecoverable, would be irretrievably lost.

Tar sand strip mining could permanently alter the site potential to produce forage on approximately 840 acres. The changes would be irreversible.

Soil would be irretrievably lost as a result of surface-disturbing activities.

Some degradation of air quality would be irreversible, due to established urbanization in the area after closure of the oil shale and tar sand facilities.

### SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Because of the number and amount of minerals considered unrecoverable with present mining technology and practices, loss of mineral production could occur in the long term to achieve short-term minerals production.

In areas where grazing has resulted in poor ecological condition, the loss of topsoil or source of seed for perennial plants, would reduce the long-term productivity of the range.

Use of prescribed burning techniques would result in a short-term loss of forage in the treated area of from one to three years. The long-term productivity of the area can be increased by up to three times the annual production rate. Chemical treatments and clear cutting would have similar short-term losses for long-term forage gains. A total of 16,000 acres would be treated using these methods, resulting in an additional 1,700 AUMs of forage.

The harvesting of firewood would increase the long-term production of forage for wildlife and livestock.

Decreasing livestock use by **13,521** AUMs and deferring spring grazing in the short term would result in a long-term improvement in ecological condition in riparian areas, floodplains, and the overall range. Forage removed for mineral production sites and facilities along with oil and gas pads and roads would be considered a long-term forage loss. Forage, removed in areas with less than 10 inches of rainfall, would be considered a long-term loss (up to 30 years) unless special mitigation is employed, such as fencing and watering. Although a short-term loss of forage occurs from strip mining, in situ development, and oil and gas wells that do not go into production, a long-term forage production can be maintained or improved with adequate rainfall and proper reclamation techniques.

Although a short-term forage and habitat loss would result from forage and habitat improvement projects, a long-term forage and habitat benefit would result. The short-term effects of livestock project construction, timber harvest, and energy development would be the abandonment of habitats by wildlife during the developmental and operational phases. It would be expected that wildlife would return to these areas following a period of successful reclamation. In mineral-developed areas with limited rainfall or poor quality soils, reclamation of wildlife habitat could take up to 30 years resulting in a long-term loss of habitat. This period of time



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Table 4-18

Projected Average Daily Traffic Levels  
Caused By BLM Generated Impacts, By Alternative,  
By Year 1995

Highway Segment	Resource Protection	1995 Commodity Production	Balanced Use
<u>Utah 88</u>			
From Ouray to U.S. 40	812	1,556	1,285
<u>U.S. 40</u>			
From Utah 88 to Vernal	1,618	3,102	2,562
From Vernal to Jensen	1,469	2,815	2,325
From Jensen to County 262	654	1,253	1,035
From County 262 to Colo. Line	634	1,215	1,004
<u>County 262</u>			
From Utah 45 to U.S. 40	95	182	150
<u>Utah 45</u>			
From Vernal to County 262	411	787	650



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could be lessened to a short-term impact with proper reclamation techniques. A short-term impact to wildlife habitat from construction of range improvement projects would enhance wildlife habitat over the long term.

The 28,000 acre-feet of water used to develop two additional oil shale tracts would be considered a long-term allocation of water (up to 30 years). This water would be available for other use upon project completion. During the long-term period of water depletion from the White River, salinity would be increased downstream. The water quality would be restored when the water was no longer needed for oil shale development.

A long-term improvement of riparian areas and floodplains would result from short-term closure of 14,200 acres to ORV use and limiting grazing on 5,950 acres.

The removal of woodlands for energy-related activities, chainings, burnings, and others, is considered a long-term loss (up to 150 years).

Wildfires occurring in pinyon/juniper stands would delay the regeneration process by destroying the seed source. Reestablishment of stands would be delayed 40 to 80 years. Depending on the size of the burn, the allowable cut could be reduced, thus, less pinyon and juniper firewood would be available for firewood cutters.

The amount of air quality degradation that would result from oil shale and tar sand developments would be a long-term commitment.

### CUMULATIVE SUMMARY

Direct cumulative impacts on minerals would generally be the same as were discussed under the BLM impacts for this alternative. However, it should be noted that while air quality permits and water supplies would be available for additional oil shale and tar sand projects, if considered separately from interrelated projects, when considered cumulatively, air quality permits and sufficient water supplies may not be available, resulting in delays in development of Federal oil shale and tar sand resources.

Livestock forage use would be decreased by approximately **13,521** AUMs below average use. This would be an overall cut of approximately 20 percent from average use (present operating levels) and approximately 48 percent from active preference (allowable operating levels). Grazing would be eliminated on the White River Bottoms, Birchell, and Green River AMP allotments.

BLM actions would result in improvement in ecological condition in 49 allotments and a static condition in 5 allotments. No declines in ecological condition would occur on an allotment basis. Approximately 943,000 acres would improve, and 171,900 acres would remain in static ecological condition. The net improvement of

ecological condition would be a change of 5 to 10 percent, from fair to good, and approximately one percent from good to excellent.

Wildlife forage use would increase by approximately 11,959 AUMs, (27 percent) above the allocated use. This would be an increase of approximately 200 percent above the average (current) use.

Wild horses would be allocated 2,940 AUMs, a change from no allocation. The change would be a 19 percent increase over average (current) use.

An estimated 1,181 AUMs would be lost due to mineral development activities; however, the land treatments would add an estimated 1,708 AUMs of forage.

Cumulative depletions of the White River would increase **to** 195,000 acre-feet per year or 42 percent of the average annual flow. This would exceed the capacity of the White River reservoir by 86,000 acre-feet.

The cumulative increase in total dissolved solids concentration at Imperial Dam resulting from interrelated projects and BLM actions, would be 6 mg/l. The amount is less than a one percent increase.

Cumulative impacts to the watershed study area and floodplains are the same as discussed for BLM actions under the Current Management Alternative.

The cumulative demand for firewood could reach 7,400 cords per year by 1995. Firewood demand would annually exceed the allowable cut by 3,930 cords. The BLM would not be able to supply firewood for slightly over half of the people seeking wood permits.

With increasing population in the Uintah Basin, as well as numbers of big game, hunting opportunities could expand from 6,770 visitor days in 1982 to **17,580** or an increase of **10,810** visitor days by 1995. The quality of hunting would remain the same, as the increase of big game numbers would be nearly the same proportion as the increase of hunter visitor days. Demand for all other forms of recreation, except big game hunting, would expand from the current level of 7,200 to 21,860 visitor days, an increase of 14,660. Sufficient undeveloped areas would be available to accommodate the increase in dispersed outdoor recreation activities such as sightseeing, camping, and river floating. Other activities requiring developed facilities, would be available on adjacent State and U.S. Forest Service lands.

Cumulative impacts to air quality would likely exceed



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Class II TSP standards at some areas, including Dinosaur National Monument; the Uintah and Ouray Indian Reservation; Vernal, Utah; and Rangely, Colorado. Yellow-brown atmospheric discoloration resulting from emissions of nitrogen oxides from synthetic fuel facilities and power plants would likely be visible on the Uintah and Ouray Indian Reservation, at Dinosaur National Monument, and near power plants and synthetic fuel facilities.

Cumulative impacts on infrastructure needs for the Resource Protection Alternative are summarized in Table 4-17. Population projections for Uintah and Duchesne Counties and the communities of Ballard, Vernal, and Dinosaur, show a need to accommodate a greater than 10 percent annual growth rate. Roosevelt, Myton, and Rangely would need to accommodate a greater than five percent annual growth rate.

The cumulative transportation impacts of the baseline, interrelated projects, and BLM actions, are displayed on Table 4-19. All highways except County Road 262 would provide an unsatisfactory level of service resulting in traffic congestion, accident rate increase, and road deterioration.



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Table 4-19

Cumulative Projected Average Daily Traffic Levels  
for Baseline, Interrelated and BLM Actions, By Alternative,  
By Year 1995

Highway Segment	Resource Protection	1995 Commodity Production	Balanced Use
<u>Utah 88</u>			
From Ouray to U.S. 40	8,075	8,819	8,548
<u>U.S. 40</u>			
From Utah 88 to Vernal	22,787	24,271	23,731
From Vernal to Jensen	22,169	23,515	23,025
From Jensen to County 262	9,841	10,440	10,222
From County 262 to Colo. Line	9,295	9,876	9,665
<u>County 262</u>			
From Utah 45 to U.S. 40	1,639	1,726	1,694
<u>Utah 45</u>			
From Vernal to County 262	NA	NA	NA

NA: Not Available



# COMMODITY PRODUCTION ALTERNATIVE

## MINERALS

### Oil and Gas

#### BLM Impacts

Total annual production and associated disturbance would remain the same as discussed for the Current Management Alternative. The conflicts between the other surface resources (reflected by the category designations) and the potential oil and gas areas are summarized in Table 4-7.

As discussed in the Resource Protection Alternative, the potential exists for oil and gas developments being inadvertently damaged or destroyed by oil shale construction activities.

### Oil Shale

#### BLM Impacts

Approximately 130,000 to 180,000 bpd could be produced on four future oil shale tracts located within the priority management area (Figure 2-16). Approximately 1,700 to 2,200 acres would be disturbed during the production phase. An additional 20,000 bpd could be produced on an in situ oil shale tract. Approximately 1,250 acres would be disturbed during production, due to mining and related construction activities.

### Tar Sand

#### BLM Impacts

Approximately 25,000 to 60,000 bpd could be produced on future hydrocarbon leases (Table 4-4). Approximately 13,400 to 22,700 acres would be disturbed due to mining and related construction activities (Table 4-5).

All public land within the STSAs would be available for tar sand development (Table 4-11). Tar sand within the Naval Oil Shale Reserve is withdrawn and reserved for the U.S. Navy (Figure 1-4). Special mitigating measures (category system) could have an effect on tar sand development similar to those discussed for oil and gas development which are summarized in Table 4-11.

Tar sand deposits and shallow oil shale deposits occur in the same geographical areas. Development of one of the resources would significantly delay the development of the other resource.

### Gilsonite

#### BLM Impacts

Anticipated impacts would be similar to those discussed in the Resource Protection Alternative.

### Sand and Gravel

#### BLM Impacts

Several additional areas could be made available for sand and gravel disposal. Approximately 50 to 110 acres could be disturbed annually. Sufficient sand and gravel would be made available to meet the projected demand over the next several years.

### Building Stone

#### BLM Impacts

One new area would be available for building stone collection which would cover an additional 24,500 acres. ***The number of acres which would actually be disturbed is unknown.*** Approximately 1,000 acres of building stone could be damaged or destroyed by development of in situ oil shale.

## RIGHT-OF-WAY CORRIDORS

#### BLM Impacts

Under this alternative, approximately 174,000 acres would be affected in the designated corridors (Figure 2-19). Major resource conflicts would include wildlife habitat, camp sites, productive woodlands, habitat for threatened and sensitive plant species, areas in critical and severe erosion condition, scenic overlooks, river corridors, visual resources, and floodplains (Appendix 9, Utility Corridors and Segments by Alternative). Site specific environmental documentation would be prepared for construction within the 330 miles of proposed corridors when specific right-of-way applications are received.

## FORAGE

#### BLM Impacts

##### Blue Mountain Locality:

Authorization of 6,425 AUMs for livestock and 934 AUMs for wildlife would result in an improvement in ecological condition in four allotments: Blue Mountain AMP, Doc's Valley, Point of Pines, and Stuntz Valley. Two allotments would remain static (Cub Creek and



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Green River); no allotments would decline in overall ecological condition. Approximately 29,000 acres (76 percent) would improve in condition and 9,000 acres would remain in static condition. The net improvement to ecological condition class would be a change of about 5 percent, from fair to good and from good to excellent (Appendix 16, Anticipated Change in Ecological Condition Class).

An upward trend in ecological condition would result from land treatments, water development, and the development and revision of grazing systems. Approximately 11,625 acres would be burned or chemically treated. Doc's Valley and Blue Mountain AMP allotments would gain 582 AUMs beyond their original allocation levels; the other four allotments would have their carrying capacity returned to what it was at the time of adjudication. The total amount of forage produced in this locality would be 7,369 AUMs. Development of a total of three reservoirs, one spring, and one mile of pipeline in the Blue Mountain AMP, Green River, and Point of Pines allotments would result in better grazing distribution and improve overall plant vigor within the allotments. Grazing systems would be developed for Point of Pines, Doc's Valley, and Stuntz Valley; and the Blue Mountain AMP would be revised. Implementation of the grazing systems would defer spring grazing, resulting in an improvement in ecological condition as described in the general impact discussion of forage.

Wildlife forage would be reduced 834 AUMs (47 percent) below current use. When compared to allocated use, the reduction would be 66 AUMs or seven percent. The 66 AUMs would be available to support the increased livestock use.

Minerals developments would destroy an estimated 10 AUMs, bringing the total available forage to 7,359 AUMs.

### **Bonanza-Rainbow Locality:**

Authorization of 62,026 AUMs for livestock, 377 AUMs for antelope, no AUMs for wild horses, and an unknown portion of 12,784 AUMs for deer would improve ecologic condition on 14 allotments, and 15 allotments would remain static; no allotments would decline in ecologic condition (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 252,400 acres (40 percent) would improve and 380,800 acres would remain in stable ecologic condition. No declines in overall range condition would occur in this locality. The net improvement to ecological condition class would be a change of about 1 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvements in ecological condition would result from several actions. A total of 15 grazing systems would be prepared or revised to defer spring grazing. A total of 48 water developments would improve livestock and wildlife distribution and forage utilization on 12

allotments. Approximately 1,000 acres of sagebrush would be burned or chemically treated in the Raven Ridge allotment to improve forage quality and quantity (68 AUMs).

Total livestock use would increase by 703 AUMs (one percent) above active preference. These increases would occur in Asphalt Draw, Brewer, Olsen AMP, Raven Ridge, Sand Wash, Sunday School Canyon AMP, and Watson allotments. The increases would result from the land treatments or the transfer of wildlife AUMs to livestock.

Wild horses would be relocated outside of this locality under this alternative. The 480 AUMs of forage would be available for livestock use.

Antelope would be authorized 377 AUMs. This is 385 AUMs (51 percent) below the current level of use. However, it is 65 AUMs above the number of AUMs allocated to antelope at the time of forage adjudication. The additional 65 AUMs would be deducted from the forage allocated for deer.

The 2,959 AUMs allocated for deer in this locality would be reduced by 1,564 AUMs (53 percent). Mineral developments would eliminate approximately 859 AUMs (Appendix 15). Antelope would be given 65 AUMs from deer and livestock would be given 640 AUMs.

Authorized deer use in herd unit 28A which encompasses the Bonanza-Rainbow, Book Cliffs, and Hill Creek localities would be 12,784 AUMs. No attempt is made to break down this amount of forage by individual locality. It represents the amount of forage required to support current deer use, and no change to the deer population is expected.

### **Book Cliffs Locality:**

Authorization of 28,385 AUMs for livestock, 0 AUMs for wild horses, an unknown portion of 12,784 AUMs for deer, and an unknown portion of 3,192 AUMs for elk would result in the improvement of plant vigor and ecologic condition on four allotments and static condition on three allotments (McClelland, Book Cliffs Pasture, and West Water Point). Approximately 260,100 acres (86 percent) would improve and 44,000 acres would remain in static ecologic condition. No declines would occur in overall ecological condition in this locality. The net improvement in ecological condition class would be a change of less than 5 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvements would result from several actions (Appendix 5, Forage Actions by Alternative). Four allotments (Atchee Ridge AMP, Winter Ridge AMP, Horse Point AMP, and Sweetwater AMP) would operate under revised grazing systems that would rotate grazing use to avoid the impacts of spring grazing upon plant vigor. Approximately 14,500 acres would be improved through



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land treatments resulting in an additional 1,800 AUMs of forage.

Total livestock use would increase to 28,385 AUMs, a 24 percent increase above active preference. All seven livestock allotments would operate at full preference. Approximately 5,014 AUMs of wildlife forage would be given to livestock to attain full preference. The Winter Ridge wild horse herd would be relocated outside this locality under this alternative. The 108 AUMs of forage would be available for livestock use.

Authorized deer use would not change from current use as previously discussed in the Bonanza-Rainbow locality.

Authorized elk use in herd unit 21 which encompasses the Book Cliffs and Hill Creek localities would be 3,192 AUMs. No attempt is made to break down this amount of forage by individual locality. It represents the amount of forage required to support current elk use, and no change to the elk population is expected.

Mineral development would result in a loss of 2,949 AUMs (Appendix 15, Forage Impacts).

### Hill Creek Locality:

Authorization of 12,649 AUMs for livestock, 710 AUMs for wild horses, an unknown portion of 12,784 AUMs for deer, and an unknown portion of 3,192 AUMs for elk would result in improvement in ecological condition in eight allotments and static condition in four allotments (Green River AMP, Bartholomew, Santio Sibello, and Thorne-Ute-Broome) (Appendix 14, Anticipated Trend in Ecological Condition). Approximately 100,900 acres would improve, 39,100 acres would remain static, but no acres would decrease in overall ecological condition. The net improvement in ecological condition class would be a change of less than 5 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

Improvement in plant vigor and ecological trend would result from deferment of spring livestock use in three allotments, development of 12 water projects and treatment of 3,800 acres. One grazing system would be continued for the Green River AMP, a grazing system would be prepared for Birchell, and a grazing system would be revised for West Tabyago AMP. Water developments in Oil Shale, Pack Mountain, and Tabyago allotments would improve livestock distribution and forage utilization. Land treatments would improve range conditions in Birchell, Tabyago, Upper Showalter, Ute, and West Tabyago allotments adding 3,160 AUMs of forage.

Livestock would increase to 12,649 AUMs, 18 AUMs above active preference. This increase would occur in the Ute and Birchell allotments, resulting from land treatments.

Wild horses would be allocated 710 AUMs under this alternative. Approximately 316 AUMs would result from land treatments and 223 AUMs would be taken from wildlife. Approximately 171 AUMs would be taken from the Horse Point allotment (within the Book Cliffs locality). The wild horse numbers would be in balance with the carrying capacity of the range.

Authorized deer use would not change from current use as previously discussed in the Bonanza-Rainbow locality.

Authorized elk use would not change from current use as previously discussed in the Book Cliffs locality.

Approximately 38 AUMs would be lost to mineral developments.

## WILDLIFE/WILD HORSES

### BLM Impacts

The utilization of 17,287 AUMs of existing forage from BLM lands by big game species, an additional 1,325 AUMs from Dinosaur National Monument, and 710 AUMs by wild horses would be sufficient to support near current big game and substantially decreased wild horse numbers. This level of forage utilization would be 69 percent (39,315 AUMs) short of meeting the requirements of the UDWR prior-stable wildlife objectives. The Blue Mountain mule deer herd (26) would be reduced by 427 head (27 percent) as a result of livestock increases. This alternative would also result in a decrease of 76 percent (2,220 AUMs) of the forage required to meet the Vernal District wild horse objective population levels.

The distribution of the various species would be as follows: 302 antelope (166 at Bonanza-herd unit 7, and 136 at East Bench); 7,300 mule deer (1,100 at Blue Mountain-herd unit 26, and 6,200 at Book Cliffs-herd unit 28A); 500 elk (all located at Book Cliffs-herd unit 21); 60 wild horses (all located at Hill Creek). The Bonanza antelope herd would decrease by 309 animals (from current numbers) as a result of AUM reductions to wildlife and greatly increased livestock numbers. The Bonanza and Winter Ridge wild horse herds would be eliminated; populations would be managed at the Hill Creek herd location.

Projected oil and gas development would have the same effect as previously described under the Current Management Alternative (Appendix 15-C, Forage Impacts).

Projected underground oil shale development could significantly affect crucial antelope habitat. Potential in situ oil shale development would significantly affect crucial winter mule deer and elk habitat. In addition, proposed tar sand development would significantly affect



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additional crucial mule deer, elk, and wild horse habitat. These wildlife species would be displaced to adjoining habitat and be subject to crowding, stress, and competition for available food, water, and cover (Hamilton 1984) (Appendix 15-C, Forage Impacts). ***Impacts to upland game birds and waterfowl would be the same as are discussed under the Current Management Alternative.***

An unquantifiable amount of habitat adjoining oil and gas, tar sand, and oil shale developments would be abandoned by most wildlife species as a result of disturbance (harassment), noise, and poaching. Indirect wildlife losses could increase significantly because of poaching and harassment from increased human populations. Gilsonite and sand and gravel development would not significantly affect any crucial wildlife habitat (Appendix 15-C, Forage Impacts).

Increased livestock production under this alternative would significantly affect certain wildlife populations. Deer and elk would be crowded into small areas of suitable habitat and be exposed to stress, inadequate amounts of forage and water, and increased poaching.

Annual depletion of 56,000 acre-feet of water from the White River could jeopardize the continued existence of two endangered fish species, the Colorado squawfish and humpback chub, and another species that is a candidate for listing, the razorback sucker. No impacts to the species would occur if the water is purchased from the White River Dam Project (WRDP) because of agreed upon conservation measures in the biological opinion for that project (FWS 1982). However, the White River Dam Project could not supply water for all projects proposed in the UBS Development EIS and this additional oil shale development. If the water is not purchased from WRDP, the degree of impact would be determined in the Fish and Wildlife Service's Biological Opinion.

### WOODLANDS

#### BLM Impacts

By 1995, demand resulting from BLM projects would be approximately 1,900 cords per year.

Restrictions imposed upon woodland management by other resources would limit the allowable cut to 3,730 cords annually produced from 31,100 acres of woodland. Twenty acres would be eliminated from the woodland management to protect recreation sites, 680 acres would be lost to rights-of-way placed in utility corridors, 18,100 acres would be eliminated by tar sand development and 1,500 acres would be used for oil shale development. One hundred acres would be lost to wildfires over a ten-year period. In total, 20,400 acres capable of contributing 1,740 cords of firewood to the

annual allowable cut, would not be available for harvest and use by wood cutters.

Livestock grazing in cottonwood stands could prevent the establishment of seedlings. Cottonwood stands would grow old, and when removed by harvest or natural processes, would not be replaced by natural regeneration.

### RECREATION

#### BLM Impacts

As a result of BLM projects, big game hunting opportunities would increase by 1,560 visitor days. The demand for all other recreation activities except big game hunting would increase by 5,900. However, 200 visitor days would be foregone as a result of ORV restrictions. ***An ORV designation of open for public lands adjacent to the Uintah and Ouray Indian Reservation Hill Creek Extension would be inconsistent with the existing Tribal plan. ORV users could unintentionally or intentionally cross from open public lands to closed Tribal lands and despoil the primitive or wilderness character that the Tribe desires to maintain.*** The White River canyon would be opened to ORV use, which could lead to a loss of primitive recreational values. There would be a loss of recreation values by not protecting scenic travel corridors, Musket Shot Spring, or Grand Valley overlooks.

The protective status prohibiting development in White River Canyon would be dropped. The placement of structures, such as pipelines, along and across the river would adversely affect the semi-primitive setting.

Increased water demands from tar sand and oil shale development would deplete flows on the White River to the minimum level on average water years. Minimum flows would result in marginal canoeing.

Utility and transportation corridors would cross 6,700 acres or 13 percent of the visual resource management Class II, and 6,700 acres or 9 percent of Class III. Certain types of rights-of-way placed in the corridors would not comply with the visual standards of these classes. Impacts would, however, be minimized by consolidating land-disturbing activities to designated corridors. This would prevent the proliferation of construction scars and man-made intrusions due to random crisscrossing of the landscape.

Nine percent of the proposed area for oil shale leasing and two percent of the area proposed for tar sand leasing contains Class II visual management standards and development would conflict with the visual standards. Development would create an unacceptable contrast with the natural environment.



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Potential deposits of sand and gravel along the Green River from Ouray to Sand Wash, if developed, could contrast with the existing landscape. Development of 420 acres of potential sand and gravel deposits along the Green River from Dinosaur National Monument to Jensen and 1,800 acres along the White River would not conform with VRM Class II and would contrast with the existing landscape.

As a result of dropping the designation for the Book Cliffs Mountain Browse Natural Area, approximately 30 AUMs would become available for grazing and 400 acres would become available for mineral leasing.

### FIRE MANAGEMENT

#### BLM Impacts

Full suppression of wildfire would protect approximately 84,500 acres throughout the BCRA, safeguard private property, and prevent the spread of wildfire to non-Federal lands.

Approximately 13,000 to 28,500 acres would be prescribed burned over the next 10 years, providing additional forage for livestock (under this alternative, prescribed burns would not be initiated to enhance wildlife habitat or forage). The net effect of prescribed burns would be a significant increase in forage available for livestock and a potential reduction in wildlife habitat. These projects could occur in any vegetation-type or locality.

### WATERSHED

#### Water Use

##### BLM Impacts

Development of four additional oil shale tracts would require approximately 56,000 acre-feet of water per year for underground mining (Table 4-12). That amount is 12 percent of the average annual flow of the White River. Less water would be required if modified in situ techniques are employed.

If the water could not be purchased from other water users with valid rights, development could be delayed or prevented, since the White River is essentially closed to further appropriation.

#### Water Quality

##### BLM Impacts

Less restrictive mineral leasing and ORV travel restrictions on public water reserves and floodplains would lead to a slight, unquantifiable deterioration of water quality.

The Detailed Development Plan for the White River Shale Project assumes no wastewater discharge from tracts U-a and U-b (Bechtel Petroleum, Inc. 1981). Using the same assumption for any additional oil shale leases leads to the conclusion of no impact to water quality. However, the wastewater would contain high concentrations of ammonia, sulfide, phenols, oil and dissolved solids, and has the potential to pollute both groundwater and surface water if any seepage or accidental discharge occurs. Based on depletion information in the UBS Development EIS (BLM 1982b), diverting 56,000 acre-feet per year from the White River would increase total dissolved solids concentrations at the mouth of the White River by 5.2 mg/l and by 2 mg/l at Imperial Dam. This increase would be less than 1 percent.

### Soils

#### BLM Impacts

Surface disturbance of 13,400 to 22,700 acres for tar sand recovery, 1,200 to 1,600 acres for oil shale mining, 1,200 to 3,800 acres for oil and gas production, would increase soil erosion in the BCRA. Reclamation would reduce the average annual disturbance to about 5 to 10 percent of the total. Sediment yields from reclaimed surface mines were 300 to 600 percent higher than for undisturbed sites (Lusby and Toy 1976). In the Piceance Basin of Colorado, increases in sediment yield of 5.8 to 11.6 tons per acre per year during initial construction of oil shale mining sites and 2.9 tons per acre per year after construction were reported (Frickel et al. 1975). Assuming a tripling of soil loss from disturbed sites in the BCRA, an additional 45,800 to 81,500 tons of soil would be lost in the next 10 years. Although this additional soil loss is less than one percent of the current soil loss from the entire BCRA, localized impacts could be severe with gully formation in areas with reduced vegetation cover.

Less restrictive mineral leasing and ORV categories in critical and severe erosion condition areas would result in unquantifiable increases in soil erosion.

Confining major rights-of-way to 62.3 miles of corridors totalling 23,000 acres in severe and critical erosion condition would result in disturbance of fewer acres and thus, decreased soil erosion.

Constructing up to 320 detention-retention dams on 6,400 acres in severe and critical erosion condition areas, would reduce soil loss by 41,000 tons over the next 10 years. The short-term increase in wind and water erosion resulting from construction would be insignificant.



## CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

### Floodplains

#### BLM Impacts

Floodplain condition would not be significantly affected by implementation of any BLM actions considered for this alternative.

### Boulevard Ridge Study Area

#### BLM Impacts

Discontinuing protection for the watershed study area would result in an unquantifiable amount of surface disturbance from livestock grazing, mineral development and other resource uses.

## LAND TENURE ADJUSTMENT

#### BLM Impacts

Land ownership could change on up to 16,000 acres available for exchange. Up to 10,000 acres could be acquired by BLM, if they become available (Figure 2-7). No applications or specific proposals have been received for lands identified for disposal, so an impact analysis is not possible at this time. The lands identified for acquisition have high mineral values and would improve administration of proposed development areas under this alternative. Site specific environmental analyses would be done prior to disposal or acquisition of these lands.

## AIR QUALITY

#### BLM Impacts

The impacts described here are based primarily on previous analysis (Aerocomp 1984, Dietrich et al. 1983). Aerocomp determined expected impacts for 25,000 bpd and 100,000 bpd of tar sand development in the PR Spring area. The impacts from the 60,000 bpd tar sand production considered here are expected to be intermediate between the impacts assessed by Aerocomp. Direct impacts from new oil shale leasing at up to 180,000 bpd, would double the impacts assessed by Dietrich et al. for an 80,000 bpd scenario.

The National Ambient Air Quality Standards (NAAQS) and Class II increments for TSP would be exceeded, mainly from surface mining activities and travel on unpaved roads. SO<sub>2</sub> impacts would be close to the Class II 24-hour increment. Nitrogen dioxide concentrations would be well within the NAAQS.

Highly visible atmospheric discoloration would occur at the Uintah and Ouray Indian Reservation and near the synfuel facilities. Less visible perceptible discolora-

tion may occur at Dinosaur and at Colorado National Monuments.

## SOCIOECONOMICS

Methodologies and computations that were used to estimate economic impacts are discussed in Appendix 12 (Methodology for the Economic and Social Analysis).

### Economic Conditions

#### BLM Impacts

Oil and gas production and subsequent employment and personal income opportunities would not significantly differ from that analyzed in the Current Management Alternative.

In areas where mineral resources overlap (e.g. oil shale, gilsonite, tar sand, oil and gas), only one resource could be developed at a time. In certain cases, the remaining mineral resources could not be developed at all. As a result, unquantified employment and personal income opportunities associated with development of these other resources would be delayed or not realized. These losses would be insignificant.

Gilsonite, sand and gravel, and miscellaneous mineral activities would continue essentially unchanged from that level discussed under the Current Management Alternative.

Production from BLM oil shale and tar sand leases, and therefore, local employment, population growth infrastructure needs, and fiscal problems would be greatest under this alternative. The resulting population increases are shown in Table 4-20.

Implementation of this alternative could increase the region's population by 40,448 by 1995. Including baseline population projections, Uintah County and the communities and surrounding areas of Roosevelt and Vernal would, at some time, need to accommodate a greater than 10 percent annual growth rate. The communities of Dinosaur and Rangely would, at some time, need to accommodate a greater than 5 percent annual growth rate.

The increased relative importance of the high-paying mining and construction sectors, and the increased demand for workers in other sectors would increase the region's per capita income by an unknown amount.

Population growth would require infrastructural improvements similar to those discussed under the Resource Protection Alternative but to a greater degree. The additional regional infrastructural needs are presented in Table 4-21. These needs can be estimated for each community by comparing the projected population increases of that community (Table 4-20) with the



Table 4-20

Population Projections  
for  
Commodity Production Alternative

Area	1982			1985			1990			1995			2000		
	Base	Base	Base	BLM	Other	Base	BLM	Other	Base	BLM	Other	Base	BLM	Other	Other
Duchesne	15,273	17,778	17,778	0	4,965	18,632	2,575	10,226	18,684	4,135	13,082	18,929	4,135	15,723	
Roosevelt CCD	11,827	13,695	13,695	0	348	15,057	2,549	3,019	15,005	4,093	3,122	14,636	4,094	3,799	
Roosevelt	4,678	5,416	5,416	0	244	5,955	1,759	2,057	5,934	2,824	2,106	5,789	2,825	2,599	
Myton	609	705	705	0	12	775	53	103	773	85	105	754	85	130	
Other	6,540	7,514	7,514	0	92	8,327	737	859	8,298	1,184	911	8,093	84	1,070	
Other	3,446	10,204	10,204	0	4,617	3,575	26	7,207	3,679	42	9,960	4,293	40	11,924	
Uintah	24,170	25,730	25,730	0	18,940	29,326	17,520	35,679	29,863	28,127	45,196	28,985	28,127	53,500	
Uintah-Ouray	4,737	5,061	5,061	0	40	5,699	526	726	5,730	562	698	5,565	562	757	
Ballard	678	775	775	0	20	966	175	315	976	281	297	926	281	619	
Other	4,059	4,286	4,286	0	20	4,733	351	411	4,754	281	401	4,639	281	138	
Vernal	19,417	20,653	20,653	0	1,413	23,611	12,614	10,242	24,117	27,002	12,154	23,404	27,283	14,755	
Vernal	8,549	9,291	9,291	0	565	11,065	5,606	4,148	11,369	12,095	4,912	10,941	12,376	5,972	
Other	10,868	11,362	11,362	0	848	12,546	7,008	6,094	11,389	14,907	7,242	12,463	14,907	8,783	
Bonanza	16	16	16	0	178	16	4,380	1,575	16	563	0	16	281	0	
Moffat-Rio Blanco	23,934	24,355	24,355	0	146	28,345	613	1,738	27,646	984	2,016	28,144	984	2,403	
Dinosaur	451	501	501	0	64	405	343	810	425	551	943	437	551	1,124	
Rangely	3,235	3,193	3,193	0	82	3,993	270	928	3,805	433	1,073	3,962	433	1,279	
Grand	8,100	9,850	9,850	45	691	10,570	830	834	10,324	6,215	915	9,676	2,372	919	
Thompson		380	380	45	691	366	830	834	366	6,215	915	365	2,372	919	
Westwater		38	38	45	691		830	834		6,215	915		2,372	919	
Mesa				17			307			2,295			877		

CCD: Census County Division



Table 4-21

Commodity Production Alternative  
Summary of Regional Socioeconomic Impacts  
Resulting from BLM Actions

Socioeconomic Development Category	Change From Projected Baseline			
	1985	1990	1995	2000
Population Growth				
Total	-	21,962	40,448	36,605
School Age	-	4,562	10,324	10,598
Employment Growth	-	11,231	19,368	15,068
Household Growth	-	7,688	13,433	10,145
Infrastructure Requirement				
Housing				
Single family	-	4,622	8,035	6,092
Multi-family	-	1,166	2,017	1,534
Mobile homes	-	1,933	3,356	2,544
Education				
Students	-	4,562	10,324	10,597
Classrooms	-	194	423	432
Teacher	-	194	423	432
Health Care				
Hospital beds				
General care	-	57	96	80
Long-term care	-	27	46	55
Medical personnel				
Doctors	-	27	40	33
Dentists	-	27	34	30
Nurses	-	48	82	70
Public health nurses	-	21	25	20
Medical health care				
Clinical psychologists	-	21	22	18
Methal health workers	-	21	22	18
Public Safety				
Law Enforcement				
Police officers	-	27	46	80
Patrol cars	-	27	46	80
Jail space (sq. ft.)	-	10,931	20,883	18,254
Juvenile holding cells	-	21	22	20
Fire Protection				
Fire flow (gpm)/ duration (hr.) <sup>a</sup>				
Emergency Medical Services				
Ambulances	-	9	25	20
Emergency medical technicians	-	147	173	141



Table 4-21 (Continued)

Commodity Production Alternative  
Summary of Regional Socioeconomic Impacts  
Resulting from BLM Actions

Socioeconomic Development Category	Change From Projected Baseline			
	1985	1990	1995	2000
Utility Service Demands				
Water System				
Connections	-	5,554	10,293	9,041
Supply (10 <sup>6</sup> gal./yr.)	-	3,244	6,010	5,280
Storage (10 <sup>6</sup> gal./yr.)	-	1,621	3,006	2,640
Treatment (10 <sup>6</sup> gal./yr.)	-	3,244	6,010	5,280
Sewage System (10 <sup>6</sup> gal./yr.)	-	625	1,163	1,022
Solid Waste Acres/Yr.		4.6	8.6	7.8

Source: BLM 1983h.

<sup>a</sup>Fire protection measured in fire flow (gpm)/duration (hr.) cannot be aggregated across the affected counties.



## CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

projected population increases of the region (Table 4-21) and applying the resulting proportion to the projected infrastructure needs of the region (Table 4-21).

The fiscal problem and issues related to rapid population growth would be similar to those discussed under the Resource Protection Alternative except that these problems would be more widespread.

The management actions would affect the amount of public rangeland forage that would be available to livestock operators. This could monetarily affect ranchers' incomes, and abilities to obtain loans, with some secondary income and employment effects through the local economy.

Compared to their existing use, 16 of the cattle operators would, on the average, have eight percent more useable forage. If the added forage were grazed, cattle operators would realize an added \$8,224 in returns above cash cost, a one percent increase over what these operators now earn.

Compared to their existing use, 5 of the sheep operators would, on the average, have five percent more useable forage. If the added forage were grazed, sheep operators would realize an added \$6,978 in returns above cash cost, a less than one percent increase over what these operators now earn.

Compared to existing use, none of the livestock operators would have less available forage. If minerals developments were concentrated in several allotments rather than spread among all allotments with mineral development potential, as was assumed in the analysis, 15 livestock operators would have two percent less forage, resulting in less than a one percent decrease in their returns above cash cost.

The number of livestock operators affected to varying degrees, and the total rancher income are shown on Tables 4-22 and 4-23, respectively.

Any increase from active preference could affect operator wealth. Under this alternative, total long-term grazing privileges would be 6,934 AUMs above active preference. At a market value of \$60 per AUM for BLM grazing permits, total operator wealth could increase by as much as \$416,040, a two percent increase in base property value Appendix 12 (Methodology for the Economic and Social Analysis).

BLM wildlife management actions would keep the big game populations near stable; however, human population increases could increase hunting by 1,560 hunter days by 1995, and increase revenues to the local economy by \$70,200. The increase would be 23 percent higher than present levels.

Human populations are projected to be the largest under this alternative. These people would cause significant long-term increases to the recreation sector. Recreation

use could increase by 5,900 recreation days by 1995 and increase revenues to the local economy by \$265,500. This increase would be 82 percent higher than present levels.

### Social Conditions

The social effects resulting from the projected population increases would be similar to those that would occur under the Resource Protection Alternative. However, the effects of implementing this alternative would be more intense and widespread. The difference would be in degree, not in the nature of the impact.

## TRANSPORTATION

### BLM Impacts

By 1995, BLM actions could increase traffic volumes on the four major highways in the areas by 16 percent (refer to Table 4-18). Highway levels of service could be reduced, but by an unknown amount. Traffic accidents and road deterioration would increase by an unquantifiable amount. Operating speeds would drop and an increased number of stoppages would occur.

## UNAVOIDABLE ADVERSE IMPACTS

Development of mineral resources such as oil and gas, tar sand, and oil shale would cause surface disturbance and a modification of topography. Such disturbances could adversely affect other surface uses and resources. Approximately five percent (1,507 acres) of the area disturbed by minerals would be used for plant sites and facilities. These areas would be lost for forage production.

Implementation of this alternative would have the greatest potential to adversely affect wildlife and wild horse populations. The emphasis on minerals development would preclude wildlife habitat improvement projects and an unquantifiable, yet significant portion of wildlife and wild horse habitat would be lost. Wild horses would be managed at much lower levels and at only one location. In most cases, increased livestock forage utilization levels would allow sufficient forage for current wildlife population levels.

Because critical and severe erosion areas would not be protected from woodland harvest, clear cuts could change the timing of runoff and possibly increase erosion.

Obtrusive developments, such as overhead power and communication lines, within the designated utility and transportation corridors would not comply with visual resource management Class II and Class III areas.

Due to proposed tar sand and oil shale development,



TABLE 4-22

Number of Operators Affected Under the Commodity  
Production Alternative and Degree of Impact

	Percent Increase From Existing Use and Revenues			Not Affected	Percent Decrease From Existing Use and Revenues		
	50-100	11-50	1-10		1-10	11-50	51-100
Public Rangeland Forage		7	13	19			
Operator Returns Above Cash Cost		3	17	19			

Note: Changes are based on average use over the past 3 years.

TABLE 4-23

Summary of Short-Term and Long-Term Economic Impacts  
to Livestock Operators in Dollars

	Current Situation	Commodity Production
<u>Cattle Operators</u>		
Gross Revenue	\$2,415,282	\$2,420,168
Total Cash Cost	1,441,458	1,438,120
Returns Above Cash Cost	973,824	982,048
Returns to Labor and Investment	526,204	535,760
<u>Sheep Operators</u>		
Gross Revenue	\$3,585,258	\$3,594,551
Total Cash Cost	1,509,804	1,512,119
Returns Above Cash Cost	2,075,454	2,082,432
Returns to Labor and Investment	1,719,522	1,726,305



## CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

insufficient water flows could preclude floatboating during midsummer to the late fall on the White River.

Salinity would increase at the mouth of the White River by 5.2 mg/l and at Imperial Dam by 2 mg/l.

An additional 45,800 to 81,500 tons of soil would be lost to erosion as a result of mineral development.

Even with mitigating measures, TSP standards could be exceeded at many areas, including Dinosaur National Monument; the Uintah and Ouray Indian Reservation; Vernal, Utah; and Rangely, Colorado. Atmospheric discoloration would be visible near synthetic fuel facilities and power plants, the Uintah and Ouray Indian Reservation, and possibly at Dinosaur and Colorado National Monuments.

### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Based on present technology, minerals mined and subsequently consumed, or left underground as unrecoverable, would be irretrievably lost. Tar sand strip mining could permanently alter the site potential on approximately 1,250 acres. In situ oil shale development could permanently alter the site potential on approximately 2,500 acres. The changes would be irreversible.

Soils lost due to surface disturbing activities would be irretrievably lost.

Allowing development in the Boulevard Ridge control study area would negate the possibility of obtaining future scientific data from that site.

Some degradation of air quality would be irreversible due to established urbanization in the area after closure of the oil shale and tar sand facilities.

A decision to select this alternative would call for the conversion of additional non-Federal agricultural lands to support urban development. It would lock people into an expanding social system that in many ways would be irreversible and, in turn, would probably solidify a new lifestyle for area residents.

### SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Because of the number and amount of minerals considered unrecoverable with present mining technology and practices, loss of mineral production could occur in the long term to achieve short-term minerals production.

A total of 21,000 acres would be treated, resulting in an additional 2,700 annual AUMs of forage. Although a short-term loss of forage and habitat would occur as a result of forage and habitat improvement projects, a long-term forage and habitat benefit would occur.

Mineral development could cause long-term elimination of forage and habitat. The duration of the impacts would depend on the amount of annual precipitation and the degree of the reclamation success. Reclamation could take up to 30 years in areas which receive less than 10 inches of precipitation annually.

Harvest of firewood would increase long-term forage production.

Over the long term, 1,000 acres of productive woodlands could be lost to oil shale development and 18,100 acres to tar sand development.

Wildfires occurring in pinyon/juniper stands would halt regeneration by destroying the seed source. Reestablishment of stands would be delayed 40 to 80 years. Depending on the size of the burn, the allowable cut would be reduced. Less pinyon and juniper firewood would be available for firewood cutters.

In the short term, areas developed for tar sand and oil shale would be adversely affected by a loss of visual quality to the natural landscape. It would be expected that the majority of the disturbance would be unnoticeable following a period of successful reclamation.

The 56,000 acre-feet of water used to develop four additional oil shale tracts would not be available for other uses until the projects would be terminated. Water quality would be restored when the depletion is no longer needed.

An unquantifiable amount of soil would be lost during construction of detention-retention dams; however, their construction would reduce soil loss by 41,000 tons over the next 10 years.

The PSD air quality increments would be available for other projects after completion of the oil shale and tar sand developments.

### CUMULATIVE SUMMARY

Direct cumulative impacts on minerals would generally be the same as were discussed under the BLM Impacts for this alternative. Air quality permits and water supplies would be available for additional oil shale and tar sand projects if considered separately from interrelated projects. When considered cumulatively, air quality permits and sufficient water supplies may not be available, delaying development of Federal oil shale and tar sand resources.

Livestock use would be increased 6,570 AUMs above active preference. This would be approximately six percent over active preference and a 63 percent increase from average use (present operating levels). BLM actions would result in improvement in ecological condition in 30 allotments and a static condition in 24 allotments. No allotments would decline in ecological condition. Approximately 642,300 acres would improve, and 472,900 acres would remain in static condition. The net improvement in fair to good ecological condition would be a change of approximately 1 percent from fair to good ecological condition.



## CHAP. 4 — COMMODITY PROTECTION ALTERNATIVE

An estimated 3,856 AUMs would be lost due to mineral development activities; however, land treatments would add an estimated 2,700 AUMs of forage.

Cumulative impacts of interrelated projects (-910 AUMs) and BLM actions (6,570 AUMs) would result in an increase of 41,595 AUMs from average livestock use. This increase would be 5,660 AUMs above active preference.

Wildlife use would decrease by 1,219 AUMs (seven percent) below current use. This represents a 60 percent decrease from the allocated level of 43,638 AUMs.

Wild horses would be allocated 710 AUMs, an increase from no allocation, but a 71 percent decrease from average use. Wild horses would be removed from the Bonanza-Rainbow and Book Cliffs localities.

By 1995, the cumulative demand for firewood could reach 8,400 cords per year. Firewood demand would exceed the allowable cut by 4,670 cords annually. The BLM would not be able to supply fuelwood for over half of the people seeking it.

Visitor days for big game hunting resulting from BLM and interrelated projects would expand from the 1982 level of 6,770 to 11,745, for an increase of 4,975 visitor days by 1995.

Increased energy development, coupled with increased population would decrease the quality of the areas available for dispersed recreation. Increased vandalism would also occur.

Big game numbers are not expected to increase over current levels. The number of hunter visitor days would almost double and as a result, hunting quality would be expected to decrease.

Demand for all other forms of recreation except big game hunting would expand from the current level of 7,200 to 24,900 visitor days or an increase of 17,700. This increase would expand demand for floating and fishing on the Green River, ORV travel and sightseeing.

Cumulative depletions would increase to 223,000 acre-feet per year or 48 percent of the average annual flow of the White River, exceeding by 114,000 acre-feet the capacity of the White River reservoir.

The cumulative increase in total dissolved solids concentration at Imperial Dam resulting from other projects and BLM actions would be 7 mg/l. This represents less than a one percent increase.

Cumulative impacts on soils would be the same as discussed in BLM impacts.

Impacts to floodplains are the same as in the Current Management Alternative.

Class II TSP standards would be exceeded at Dinosaur National Monument; the Uintah and Ouray Indian Reservation; Vernal, Utah; and Rangely, Colorado. Class II standards for SO<sub>2</sub> could possibly be exceeded in the BCRA. Yellow-brown atmospheric discoloration, resulting from emissions of nitrogen oxides from synthetic fuel facilities and power plants, would be visible from the Uintah and Ouray Indian Reservation and Dinosaur National Monument.

Cumulative impacts on infrastructure needs for the Commodity Production Alternative are summarized in Table 4-24. Population projections for Uintah and Duchesne Counties, and the communities of Roosevelt, Myton, Ballard, Vernal, Dinosaur, and Rangely, show a need to accommodate a greater than 10 percent annual growth rate. Northern Grand County would need to accommodate a greater than 5 percent annual growth rate.

Cumulative transportation impacts are displayed on Table 4-19. All highways except County Road 262 would provide an unsatisfactory level of service.



Table 4-24

Commodity Production Alternative  
Cumulative Infrastructure Needs  
BLM and Interrelated Projects

Socioeconomic Development Category	1985	1990	1995	2000
Population Growth				
Total	27,282	71,230	103,438	111,582
School Age	4,619	13,834	26,369	41,204
Employment Growth	15,817	36,822	47,571	47,121
Household Growth	8,264	22,870	31,803	31,306
Infrastructure Requirement				
Housing				
Single family	4,958	13,730	19,057	18,789
Multi-family	1,239	3,443	4,773	4,709
Mobile homes	2,066	5,730	7,949	7,835
Education				
Students	4,619	13,834	26,369	33,762
Classrooms	185	564	1,064	1,359
Teacher	185	564	1,064	1,359
Health Care				
Hospital beds				
General care	59	154	221	230
Long-term care	12	57	96	112
Medical personnel				
Doctors	16	57	77	78
Dentists	14	51	65	68
Nurses	46	132	188	196
Public health nurses	6	31	39	36
Medical health care				
Clinical psychologists	3	25	26	23
Methal health workers	4	27	28	27
Public Safety				
Law Enforcement				
Police officers	54	125	171	230
Patrol cars	54	125	171	230
Jail space (sq. ft.)	13,592	35,607	52,110	55,609
Juvenile holding cells	5	28	31	30
Fire Protection				
Fire flow (gpm)/ duration (hr.) <sup>a</sup>				
Emergency Medical Services				
Ambulances	6	19	39	36
Emergency medical technicians	38	215	268	251



Table 4-24 (Continued)

Commodity Production Alternative  
Cumulative Infrastructure Needs  
BLM and Interrelated Projects

Socioeconomic Development Category	1985	1990	1995	2000
Utility Service Demands				
Water System				
Connections	8,769	21,399	30,441	33,143
Supply (10 <sup>6</sup> gal./yr.)	5,121	12,498	17,777	19,355
Storage (10 <sup>6</sup> gal./yr.)	2,561	6,248	8,890	9,677
Treatment (10 <sup>6</sup> gal./yr.)	5,121	12,498	17,777	19,355
Sewage System (10 <sup>6</sup> gal./yr.)	992	2,417	3,443	3,749
Solid Waste Acres/Yr.	5.9	15.1	21.8	23.5

Source: BLM 1983h.

<sup>a</sup>Fire protection measured in fire flow (gpm)/duration (hr.) cannot be aggregated across the affected counties.



# BALANCED USE ALTERNATIVE (PROPOSED PLAN)

## MINERALS

### Interrelated Impacts

Refer to Current Management Alternative.

### Oil and Gas

#### BLM Impacts

Total annual production and associated disturbance would remain the same as discussed for the Current Management Alternative. The conflicts between the other surface resources (reflected by the category designations) and the potential oil and gas areas are summarized in Table 4-7.

As discussed in the Resource Protection Alternative, the potential exists for oil and gas developments to be inadvertently damaged or destroyed by oil shale construction activities.

### Oil Shale

#### BLM Impacts

Approximately 80,000 to 160,000 bpd could be produced on two to four future oil shale tracts located within the priority management area (Figure 2-16). Approximately 800 to 1,600 acres would be disturbed during the production phase. An additional 20,000 bpd could be produced on an in situ oil shale tract. Approximately 1,250 acres would be disturbed because of mining and related construction activities.

Air quality permits and water supplies would be available for additional oil shale projects if considered separately from interrelated projects. When considered cumulatively, air quality permits and sufficient water supplies may not be available.

### Tar Sand

#### BLM Impacts

Approximately 10,000 to 25,000 bpd could be produced on future combined hydrocarbon leases. Approximately 3,800 to 6,600 acres would be disturbed due to mining and related construction activities.

Special mitigating measures (lease categories) could affect tar sand development in a manner similar to that discussed in the Resource Protection Alternative with the exception that less acreage would be placed in Categories 3 and 4 if this alternative would be implemented. These are summarized in Table 4-11.

Approximately 12 percent of public land within the

three STSAs would not be available for tar sand development (Table 4-11). Most of this land has been classified as having low potential for development (Table 4-11). Land would not be leased within the Naval Oil Shale Reserve.

### Gilsonite

#### BLM Impacts

Production levels and associated surface disturbance would remain the same as discussed in the Current Management Alternative.

### Sand and Gravel

#### BLM Impacts

Approximately 20 to 50 acres could be disturbed annually as a result of sand and gravel disposal actions.

### Building Stone

#### BLM Impacts

*The impacts of this alternative would be the same as were discussed under the Commodity Production Alternative.*

## RIGHT-OF-WAY CORRIDORS

#### BLM Impacts

Rights-of-way within designated corridors could affect up to 93,000 acres (Figure 2-26). Known resource conflicts would include wildlife habitat, floodplains, areas in critical and severe erosion condition, campsites, productive woodlands, habitat for threatened and sensitive plant species, visual resources, and river corridors (Appendix 9, Utility Corridors and Segments by Alternative). Site specific environmental documentation would be prepared for construction within the 235 miles of proposed corridors when specific right-of-way applications are received.

## FORAGE

#### BLM Impacts

##### Blue Mountain Locality:

Authorization of **5,943** AUMs for livestock and 1,768 AUMs for wildlife would result in an improvement in plant vigor and an upward trend in ecological condition. This would occur on all allotments except Cub Creek and Green River, where trend would be static. Approx-



imately **17,200** acres (**45** percent) would improve and the remaining **20,800** acres would stay in a static ecological condition. The net effect of the improvement in ecological condition class would be a change of 5 to 10 percent, fair to good to excellent (Appendix 16, Anticipated Change in Ecological Condition Class). The improvement would result from land treatments (7,160 acres, producing an additional 582 AUMs of forage), seven water developments, and management through grazing systems on the Stuntz Valley, Point of Pines, Doc's Valley, and Blue Mountain allotments (Figure 2-27) (Appendix 5, Forage Actions by Alternative). No range would decline in overall ecological condition.

Sagebrush would decrease (by an unquantifiable amount) on the treated areas. The life of the treatments would be extended through the use of grazing systems. Implementation of the grazing systems would defer spring grazing, resulting in an improvement in ecological condition.

Forage allocated for deer would increase by 768 AUMs above the allocated use to the same level as currently utilized this locality. These additional AUMs would result from land treatments.

Minerals developments would result in an expected loss of eight AUMs Appendix 15 (Forage Impacts).

Under this alternative, the combined livestock and wildlife use shows an apparent deficit of **348** AUMs (**5** percent) between the authorized use levels and the projected available forage. This apparent deficit is not expected to adversely affect the overall range condition for several reasons. Since the dietary requirements of deer and cattle are not the same, an unknown quantity of noncompetitive forage exists within this locality. An unknown quantity of wildlife forage would also be available on intermingled State and private lands. Finally, implementation of grazing systems would potentially improve the range condition by an unknown amount. The combination of these unknown factors would more than balance the apparent deficit. The monitoring program would be essential in determining the actual range condition and quantity of available forage under this approach. **Adjustments to livestock and wildlife would be accomplished following monitoring.**

## **Bonanza-Rainbow Locality:**

Authorization of **45,249** AUMs for livestock, none for wild horses, 1,123 AUMs for antelope, and an unknown portion of the deer use in herd unit 28A (the proposed use for deer herd unit 28A is 32,577 AUMs) would result in an improvement in plant vigor and ecological condition on **23** allotments. **Stabilization of plant vigor and ecological condition would occur on six allotments** (Bohemian Bottoms, Brewer, Miners Gulch, White River, and White River Bottoms). Approximately 527,000 acres (83 percent) would improve and the re-

maining 106,300 acres would remain in a static ecological condition. No range would decline in overall ecological condition. The net effect of the improvement in ecological condition class would be about 5 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class). This improvement would result from several actions. Grazing pressure would be lessened as a result of the decrease in forage allowed for livestock use (approximately **16,000** AUMs) and the elimination of wild horse use (480 AUMs).

The use of grazing systems on 17 allotments would defer spring grazing and improve plant vigor. Grazing distribution would be improved by development of 56 water developments. Treatment of 1,000 acres would add an additional 68 AUMs (Appendix 5, Forage Actions by Alternative; Appendix 14, Anticipated Trend in Ecological Condition). **Total authorized livestock use would amount to 45,249 AUMs (16,074 AUMs below active preference). Seventeen allotments would be authorized less than active preference, and 12 allotments would remain at active preference.**

Forage allocated for antelope would increase to 1,123 AUMs, a 260 percent increase above allocated use. The forage would be provided from the livestock AUMs that would be decreased from active preference.

Wild horses would be removed from this locality. The 480 AUMs of forage that they currently consume would be available for livestock.

Authorized deer use in herd unit 28A, which encompasses the Bonanza-Rainbow, Book Cliffs, and Hill Creek localities, would be 32,577 AUMs. No attempt is made to break down this amount of forage by individual locality. It represents an increase of 19,793 AUMs (155 percent) above current use and would allow a substantial increase in the deer population.

This forage would be available from the original AUMs allocated to wildlife in the 1965 range adjudication (see Table 2-1). Proposed livestock and wildlife land treatments would provide additional forage AUMs.

Minerals activities would result in a disturbance of approximately 6,544 acres for a loss of 932 AUMs. This forage would be taken from the unused forage that was initially allocated for livestock.

## **Book Cliffs Locality:**

Authorization of **22,137** AUMs for livestock, no AUMs for wild horses, and an unknown portion of the deer use in deer herd unit 28A and elk herd 21 (the proposed use for deer herd unit 28A is 32,577 AUMs; the proposed use for elk herd unit 21 is 12,128 AUMs), would result in an improvement in plant vigor and ecological condition on five allotments. **Stabilization of plant vigor and ecological condition would occur on two allotments** (McClelland and West Water Point).



## CHAP. 4 — BALANCED USE ALTERNATIVE

Approximately 260,100 acres (86 percent) would improve, **with** the remaining 44,000 acres remaining stable. No range would decline in overall ecological condition (Appendix 14, Anticipated Trend in Ecological Condition). The new improvement in ecological condition class would be approximately 5 percent, from fair to good to excellent (Appendix 16, Anticipated Change in Ecological Condition Class). The imbalance between heavy use areas (drainage bottoms, water service areas, sheltering areas, etc.) and light or nonuse areas (benches, ridges, areas without water, etc.) would be corrected through development of range improvements (48 waters, 16 miles of fence, 10,500 acres of land treatment) and development of grazing systems (revision of 4 AMP's on Atchee Ridge, Sweetwater, Horse Point, and Winter Ridge) Appendix 5 (Forage Actions by Alternative). Land treatment would provide direct benefit by opening up sagebrush dominated sites, increasing edge effect and by increasing production and availability of forage. The vitality and life of treated areas would be extended through the proposed management actions.

Authorized deer use in herd unit 28A would increase 19,793 AUMs (155 percent) above current use, as previously discussed in the Bonanza-Rainbow locality.

Authorized elk use in herd unit 21 which encompasses the Book Cliffs and Hill Creek localities would be 12,128 AUMs. No attempt has been made to break down this amount of forage by individual locality. It represents an increase of 8,936 AUMs (280 percent) above current use and would allow a substantial increase in the elk population. This additional forage would be derived from land treatments and unused forage initially allocated for livestock.

The maximum allowable use for deer in herd unit 28A would be set at 32,577 AUMs and the maximum level for elk in herd unit 21 would be 12,128 **AUMs** making a total allocation limit of 44,705 AUMs, which is 2,379 AUMs over the original allocation. The total wildlife forage demand would be provided by land treatments (1,406 AUMs) and unused forage initially allocated to **wildlife**.

Wild horse use in the Winter Ridge herd unit (Winter Ridge allotment) would be eliminated under this alternative. The 108 AUMs currently used by wildhorses would be returned to livestock since no allocation was ever made for the wild horses.

The Hill Creek wild horse herd unit (primarily in the Hill Creek locality) overlaps into the Book Cliffs locale (Horse Point allotment). To satisfy the forage demand by wild horses, 171 AUMs would be allocated for their use. These AUMs would be derived from land treatment work in the Horse Point allotment (Appendix 5, Forage Actions by Alternative; Figure 2-27).

Minerals (surface disturbing activities) would eliminate 1,175 AUMs (Appendix 15, Forage Impacts). This impact would be compensated for by AUMs derived from the land treatment.

### Hill Creek Locality:

Authorization of **7,987** AUMs for livestock, 2,340 AUMs for wild horses, and an unknown portion of the deer use in herd unit 28A and elk herd unit 21 (the proposed use for deer herd unit 28A is 32,577; the proposed use for elk herd unit 21 is 12,128 AUMs), would result in an improvement in plant vigor and ecological condition on four allotments (Birchell, Green River AMP, Upper Showalter, and West Tabyago). **Stabilization of ecological condition and plant vigor would occur** on the remaining eight allotments. Approximately 30,800 acres (22 percent) would improve and the remaining 109,200 acres would remain in static ecological condition. No range would decline in overall ecological condition. The improvement would result from grazing systems (on the Birchell, Green River AMP, and West Tabyago allotments) and land treatments on 600 acres. Exclusion of livestock from 260 acres of the Green River AMP allotment would result in an improvement in riparian habitat (Appendix 5, Forage Actions by Alternative; Appendix 14, Anticipated Trend in Ecological Condition). The net improvement to ecological condition class would be about 1 percent, from fair to good (Appendix 16, Anticipated Change in Ecological Condition Class).

**Authorized** livestock use would **decrease by 4,644** AUMs (37 percent) below active preference.

Forage formally allocated to wild horses would amount to 2,340 AUMs. This would be 459 AUMs more than current use and a total increase of 2,340 AUMs (since no use has been allocated to wild horses). This increased use would come from livestock decreases and land treatments. Forage for wild horses would be allocated on 7 allotments (Lower Showalter, Oil Shale, Pack Mountain-Wild Horse, Tabyago, Upper Showalter, Ute and West Tabyago).

Authorized deer use in herd unit 28A would increase 19,793 AUMs (155 percent) above current use as previously discussed in the Bonanza-Rainbow locality.

Authorized elk use in herd unit 21 would increase 8,936 AUMs (280 percent) above current use as previously discussed in the Book Cliffs locality. **This forage would be available from the original AUMs allocated to wildlife in the 1965 range adjudication (see Table 2-1). Proposed livestock and wildlife land treatments would provide additional forage AUMs.**

Minerals activities would eliminate approximately 37 AUMs of forage (Appendix 15, Forage Impacts).



### WILDLIFE/WILD HORSES

#### BLM Impacts

The utilization of 47,596 AUMs of existing forage from BLM lands by big game species, an additional 1,325 AUMs from Dinosaur National Monument, and 2,340 AUMs by wild horses, would be sufficient to support increased big game herds and slightly reduced wild horse populations.

This level of utilization would be 16 percent, or 9,006 AUMs short of meeting the forage requirement of the UDWR prior stable big game population goals. In addition, the utilization level would be 20 percent (600 AUMs) short of reaching the forage requirement of the Vernal district wild horse population objectives. The distribution of the various wildlife species would be as follows: 900 antelope (600 at Bonanza-herd unit 7, 300 at East Bench); 17,300 mule deer (1,500 at Blue Mountain-herd 26, 15,800 at Book Cliffs-herd 28A); 1,900 elk (all located at Book Cliffs-herd 21); 195 wild horses (all located at the Hill Creek herd location).

Surface disturbance from projected oil and gas development would affect crucial antelope, elk, mule deer, and wild horse habitat as previously described under the Current Management Alternative.

Oil shale development and development of tar sand resources would result in a loss of forage, and displacement of wildlife (Hamilton 1984) (Appendix 15, Forage Impacts). Crowding, stress, and competition for forage, water, and cover could result. ***Impacts to upland game birds and waterfowl are discussed under the Current Management Alternative (see page 155).***

An unquantifiable amount of habitat adjoining oil and gas, tar sand, and oil shale developments would be abandoned by most wildlife species as a result of noise, disturbance (harassment), and poaching. Gilsonite and sand and gravel development would not significantly affect any crucial wildlife habitat (Appendix 15, Forage Impacts).

The combined effects of oil and gas, oil shale, and tar sand development, coupled with increases in livestock production, would be significant (Appendix 15, Forage Impacts).

Annual depletion of 28,000 to 56,000 acre-feet of water from the White River could jeopardize the continued existence of two endangered fish species, the Colorado squawfish and humpback chub, and another species that is a candidate for listing, the razorback sucker. No impacts to the species would occur if the water were purchased from the WRDP because of agreed upon conservation measures in the biological opinion for that project (FWS 1982). However, the White River Dam Project could not supply water for all projects proposed in the UBS Development EIS and this additional oil shale development. If the water is not

purchased from WRDP, the determination of the degree of impact will be determined in the Fish and Wildlife Service's Biological Opinion.

### WOODLANDS

#### BLM Impacts

Restrictions imposed upon woodland management by other resources would limit the allowable cut to 4,270 cords per year produced from 39,600 acres. Fifty acres would be eliminated from the woodland management to protect recreation sites, 3,500 acres would be removed to protect severe and critical erosion areas, 160 acres would be lost to rights-of-way placed in utility corridors, 4,300 acres would be used for tar sand, and 590 acres would be used for in situ oil shale development. Over a ten-year period, 100 acres would be lost to wildfires and 1,200 acres would be set aside to protect crucial wildlife habitat on Lower McCook Ridge. In total 9,900 acres capable of contributing 900 cords of firewood to the annual allowable cut would be set aside or used for purposes other than wood production. By 1995, demand resulting from BLM projects would be approximately 1,600 cords annually.

During harvest activities, big game would be displaced. Creation of additional openings or "edge" would benefit both small and big game animals. Livestock grazing in cottonwood stands could prevent the regeneration of seedlings. The cottonwood stands would grow old and when removed by harvest or natural processes, would not be regenerated naturally.

### RECREATION

#### BLM Impacts

As a result of BLM projects, big game hunting opportunities would increase by 3,350 visitor days.

The demand for all recreation activities except big game hunting would increase by **4,200** visitor days. On the other hand, 500 user days would be foregone as a result of proposed ORV closures and restrictions. Affected would be off-road travel by rabbit hunters and "bikers" in the Bonanza area.

By limiting ORV use contiguous to the Uintah and Ouray Indian Reservation in the Hill Creek area, BLM's ORV plan would be consistent with the existing Tribal plan.

There would be a loss of aesthetic and interpretive values by not continuing to protect the Grand Valley overlook.

Water demands for energy development would deplete flows on the White river to minimum on average.



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water years. Minimum flow would make floatboating marginal.

Development of some 500 acres of potential sand and gravel deposits along the Green River from Jensen to the new Bonanza Highway bridge would be in non-conformance with VRM Class III and would contrast with the existing landscape.

Utility and transportation corridors would cross 5,300 acres or 12 percent of the visual resource management Class II, and 1,100 acres or 2 percent of Class III. Certain types of rights-of-way placed in the corridor would not comply with the visual standards of these classes. Impacts would, however, be minimized by consolidating land disturbing activities to designated corridors. This would prevent the proliferation of construction scars and man-made intrusions due to random crisscrossing of the landscape. Ten percent of potential oil shale lease areas include Class II visual resources and development within this area would conflict with the visual standards. Development would create unacceptable contrasts with the natural environment.

Increased access from new roads built as a result of energy development would result in greater hunting pressures.

Impacts to the Book Cliffs Natural Area would be the same as were discussed under the Current Management Alternative.

## FIRE MANAGEMENT

### BLM Impacts

Full suppression of wildfire would protect approximately 84,500 acres throughout the BCRA, safeguard private property, and prevent the spread of wildfire to nonFederal lands (*Table 4-12, Water Requirements for Energy Development*).

Over the next 10 years, approximately 17,000 to 27,900 acres would be prescribed burned and provide additional forage for both livestock and wildlife (see discussion under Resource Protection Alternative).

Modified suppression would be utilized on approximately 967,600 to 978,500 acres. Modified suppression would result in impacts as discussed under the Resource Protection Alternative.

## WATERSHED

### Water Use

#### BLM Impacts

Development of two to four additional oil shale tracts

would require 28,000 to 56,000 acre-feet of water per year. Those figures amount to 6 to 12 percent of the average annual flow of the White River. Less water would be required if in situ or modified in situ techniques are employed.

If the water cannot be purchased from other water users with valid rights, development could be delayed or prevented, since the White River is essentially closed to further appropriation.

## Water Quality

### BLM Impacts

Less restrictive mineral leasing and ORV travel restrictions on public water reserves and floodplains would lead to a slight, unquantifiable deterioration of water quality.

The Detailed Development Plan for the White River Shale Project assumes no wastewater discharge from tracts U-a and U-b (Bechtel Petroleum, Inc. 1981). Using the same assumption for any additional oil shale leases leads to the conclusion of no impact to water quality. However, the wastewater would contain high concentrations of ammonia, sulfide, phenols, oil and dissolved solids, and has the potential to pollute both groundwater and surface water if any seepage or accidental discharge occurs. Based on depletion information in the UBS Development EIS (BLM 1982b), diverting 28,000 to 56,000 acre-feet per year from the White River would increase total dissolved solids concentrations at the mouth of the White River by 2.6 to 5.2 mg/l, and by 1 to 2 mg/l at Imperial Dam. The increase would be less than 1 percent.

## Soils

### BLM Impacts

Surface disturbance of 3,800 to 6,600 acres for tar sand recovery, 800 to 1,600 acres for oil shale mining, 1,200 to 3,800 acres for oil and gas production, would increase soil erosion in the BCRA. Reclamation would reduce the average annual disturbance to about 5 to 10 percent of the total. Sediment yields from reclaimed surface mines were 300 to 600 percent higher than for undisturbed sites (Lusby and Toy 1976). In the Piceance Basin in Colorado, estimated increases in sediment yield of 5.8 to 11.6 tons per acre per year during initial construction of oil shale mining sites and 2.9 tons per acre per year after construction were reported (Frickel, et al. 1975). Assuming a tripling of soil loss from disturbed sites in the BCRA, an additional 16,800 to 34,800 tons of soil would be lost in the next 10 years. Although this additional soil loss is less than one percent of the current soil loss from the entire



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BCRA, localized impacts could be severe, with gully formation in areas with reduced vegetation cover.

Closed and limited ORV travel designations and restrictions on mineral development in severe and critical erosion areas, would reduce soil loss by an unquantifiable amount.

Confining major rights-of-way to 46 miles of corridors totaling 13,400 acres in severe and critical erosion condition would result in fewer acres disturbed and decreased soil erosion.

Constructing up to 3,945 detention-retention dams on 78,900 acres would reduce soil loss by 505,000 tons, over the next 10 years. This is a 3.2 percent reduction from the current erosion rate.

### Floodplains

#### BLM Impacts

Excluding livestock from 470 acres, closing 5,200 acres to ORV use, and allowing no surface occupancy for mineral development, would result in an unquantifiable improvement in floodplain conditions.

### Boulevard Ridge Study Area

#### BLM Impacts

Maintaining the Boulevard Ridge watershed study area would result in additional scientific data. Discontinuing the study area would result in impacts as described in the Commodity Production Alternative.

## LAND TENURE ADJUSTMENT

#### BLM Impacts

Land ownership could change on up to **16,570** acres available for exchange or sale. Up to **18,700** acres of land could be acquired by BLM, if they become available (Figure 2-7).

No applications or site specific proposals have been received for lands identified for disposal, so an impact analysis is not possible at this time. ***The exchange of "disposal" lands for "acquisition" lands would improve public land management for all resources.*** Site specific environmental analyses would be done prior to disposal or acquisition of these lands.

## AIR QUALITY

#### BLM Impacts

The conclusions presented here are based primarily on the analysis of Aerocomp for a 25,000 bdp tar sand scenario in the PR Spring STSA, and the 80,000 bpd analysis by Dietrich, et al. for additional Federal oil shale leasing (Aerocomp 1984, Dietrich, et al. 1983). The impacts from new oil shale leasing at up to 180,000 bpd, were extrapolated by linearly increasing impacts associated with the 80,000 bpd (AP) analysis.

The Class II TSP PSD increments and the 24-hour secondary NAAQS for TSP would be exceeded (Appendix 13, Prevention of Significant Deterioration Regulations and National Ambient Air Quality Standards). Maximum concentrations were predicted to occur in the Book Cliffs State Forest.

Sulfur dioxide impacts would be within PSD increments and the NAAQS. Nitrogen dioxide impacts would also be within the NAAQS; however, visible atmospheric discoloration resulting from emissions of nitrogen oxides could occur at the Uintah and Ouray Indian Reservation and at Dinosaur National Monument.

## SOCIOECONOMICS

### Economic Conditions

#### BLM Impacts

Oil and gas production and subsequent employment and personal income opportunities would not significantly differ from that analyzed in the Current Management Alternative.

Production from the oil shale and tar sand leases, and therefore, local employment, population growth, infrastructure needs, and fiscal problems would be greater than those identified for the Resource Protection Alternative but less than for the Commodity Production Alternative.

This alternative's assumed BLM production and timing scenario could result in the region having 31,870 more people by the year 1995. Including baseline population projections, Uintah County and the communities and surrounding areas of Roosevelt and Vernal would at some time need to accommodate a greater than 10 percent annual growth rate. The communities of Dinosaur and Rangely would, at some time, need to accommodate a greater than five percent annual growth rate. Population growth would require infrastructural improvements similar to those discussed for the Commodity Production Alternative, but to a lesser degree.

The additional regional infrastructural needs are presented in Table 4-25. These needs can be estimated for each community by comparing the projected population increases of that community (Table 4-26) with the



Table 4-25

Balanced Use Alternative  
Summary of Regional Socioeconomic Impacts  
Resulting from BLM Actions

Socioeconomic Development Category	Change From Projected Baseline			
	1985	1990	1995	2000
Population Growth				
Total	-	17,195	31,370	28,000
School Age	-	3,590	7,800	8,131
Employment Growth	-	8,841	14,783	11,561
Household Growth	-	6,052	10,253	7,784
Infrastructure Requirement				
Housing				
Single family	-	3,638	6,132	4,674
Multi-family	-	918	1,540	1,177
Mobile homes	-	1,522	2,561	1,952
Education				
Students	-	3,591	7,880	8,130
Classrooms	-	153	323	331
Teacher	-	153	323	331
Health Care				
Hospital beds				
General care	-	44	73	62
Long-term care	-	21	35	42
Medical personnel				
Doctors	-	21	31	25
Dentists	-	21	26	23
Nurses	-	38	61	54
Public health nurses	-	17	19	15
Medical health care				
Clinical psychologists	-	17	16	14
Methal health workers	-	17	16	14
Public Safety				
Law Enforcement				
Police officers	-	21	35	62
Patrol cars	-	21	35	62
Jail space (sq. ft.)	-	8,605	15,939	14,005
Juvenile holding cells	-	17	16	15
Fire Protection				
Fire flow (gpm)/ duration (hr.) <sup>a</sup>				
Emergency Medical Services				
Ambulances	-	9	19	15
Emergency medical technicians	-	116	132	108



Table 4-25 (Continued)

Balanced Use Alternative  
Summary of Regional Socioeconomic Impacts  
Resulting from BLM Actions

Socioeconomic Development Category	Change From Projected Baseline			
	1985	1990	1995	2000
Utility Service Demands				
Water System				
Connections	-	5,554	10,293	9,041
Supply (10 <sup>6</sup> gal./yr.)	-	3,244	6,010	5,280
Storage (10 <sup>6</sup> gal./yr.)	-	1,621	3,006	2,640
Treatment (10 <sup>6</sup> gal./yr.)	-	3,244	6,010	5,280
Sewage System (10 <sup>6</sup> gal./yr.)	-	625	1,163	1,022
Solid Waste Acres/Yr.		3.8	6.7	5.9

Source: BLM 1983h.

<sup>a</sup>Fire protection measured in fire flow (gpm)/duration (hr.) cannot be aggregated across the affected counties.



Table 4-26

Population Projections  
for  
Balanced Use Alternative

Area	1982			1985			1990			1995			2000		
	Base	Base	BLM	Other	Base	BLM	Other	Base	Base	BLM	Other	Base	BLM	Other	Other
Duchesne	15,273	17,778	0	4,965	18,632	2,049	10,226	18,684	18,929	3,296	13,082	18,929	3,296	15,723	
Roosevelt	11,827	13,695	0	348	15,057	2,029	3,019	15,005	14,636	3,263	3,122	14,636	3,263	3,799	
Roosevelt	4,678	5,416	0	244	5,955	1,414	2,057	5,934	5,789	2,274	2,106	5,789	2,274	2,599	
Myton	609	705	0	12	775	61	103	773	754	99	105	754	99	130	
Other	6,540	7,514	0	92	8,327	554	859	8,298	8,093	890	911	8,093	890	1,070	
Other	3,446	10,204	0	4,617	3,575	20	7,207	3,679	4,293	33	9,960	4,293	33	11,924	
Uintah	24,170	25,730	0	18,940	29,326	13,942	35,679	29,863	28,985	22,425	45,196	28,985	22,425	53,500	
Uintah-Ourray	4,737	5,061	0	40	5,699	418	726	5,730	5,565	449	698	5,565	449	757	
Ballard	678	775	0	20	966	139	315	976	926	224	297	926	224	619	
Other	4,059	4,286	0	20	4,733	279	411	4,754	4,639	225	401	4,639	225	138	
Vernal	19,417	20,653	0	1,413	23,611	10,038	10,242	24,117	23,404	21,528	12,154	23,404	21,752	14,755	
Vernal	8,549	9,291	0	565	11,065	4,461	4,148	11,369	10,941	9,642	4,912	10,941	9,867	5,972	
Other	10,868	11,362	0	848	12,546	5,577	6,094	11,389	12,463	11,886	7,242	12,463	11,885	8,783	
Bonanza	16	16	0	178	16	3,486	1,575	16	16	484	0	16	224	0	
Moffat-Rio Blanco	23,934	24,355	0	146	28,345	488	1,738	27,646	28,144	785	2,016	28,144	785	2,403	
Dinosaur	451	501	0	64	405	215	810	425	437	440	943	437	440	1,124	
Rangely	3,235	3,193	0	82	3,993	273	928	3,805	3,962	335	1,073	3,962	335	1,279	
Grand	8,100	9,850	21	691	10,570	522	834	10,324	9,676	3,916	915	9,676	1,494	919	
Thompson		380	21	691	366	522	834	366	365	3,916	915	365	1,494	919	
Westwater		38	21	691		522	834			3,916	915		1,494	919	
Mesa			8			194				1,448			580		

OCD: Census County Division



## CHAP. 4 — BALANCED USE ALTERNATIVE

projected population increases of the region (Table 4-25) and applying the resulting proportion to the projected infrastructure needs of the region (Table 4-25).

The fiscal problem and issues related to rapid population growth would be similar to those discussed under the Resource Protection Alternative, except that these problems would be more widespread and of a greater intensity.

In areas where mineral resources overlap (e.g. oil shale, gilsonite, tar sand, oil and gas), the impacts would be the same as were discussed in the Resource Protection Alternative.

Gilsonite, sand and gravel, and miscellaneous mineral activities would continue essentially unchanged from that discussed in the Current Management Alternative.

The management actions under this alternative would affect the amount of public rangeland forage that would be available to livestock operators. This could monetarily affect ranchers and their ability to obtain loans, with some spinoff income and employment effects through the local economy.

Compared to their current forage use, seven cattle operators would have less than a one percent decrease in available forage, resulting in less than a one percent decrease from what they presently earn.

Compared to their current forage use, two sheep operators would have less than a one percent decrease in available forage, resulting in a less than a one percent decrease in their returns above cash cost.

If mineral developments would be concentrated in several allotments rather than spread among all allotments with mineral development potential, as was assumed in the analysis, a total of 14 livestock operators would have less than a one percent decrease in available forage, still resulting in a less than one percent decrease in returns above cash cost.

The number of livestock operators affected to varying degree is shown in Table 4-27.

Any decrease from active preference could impact an operator's wealth. Under this alternative, total long-term grazing privileges could be decreased by 36,028 AUMs from active preference. At a market value of \$60 per AUM for BLM grazing permits, total operator wealth could decline by as much as 2,161,680, a seven percent decrease in their base property value (Appendix 12, Methodology for the Economic and Social Analysis). Although this would be a significant impact on total ranch value, it would not impact an operator's current income or ability to repay loans because current use would not be affected (Table 4-27).

By 1995, BLM wildlife management actions could increase big game numbers, resulting in increased hunter

days of **3,350** and increased revenues to the local economy of **\$150,750**. This increase could be **50** percent higher than present levels.

As populations increase due to oil shale development, recreation use would increase by **4,200** days by the year 1995. The increase would result in additional revenues to the local economy of **\$198,000**. This increase would be **58** percent higher than present levels.

### Social Conditions

The social effect resulting from the projected population increases would be similar to those that would arise with the Resource Protection Alternative. The effects would be more intense and widespread than in the Resource Protection Alternative, but somewhat less than the Commodity Production Alternative. The difference would be in degree, not in the type of impact.

## TRANSPORTATION

### BLM Impacts

By 1995, BLM actions would increase traffic volumes on the four major highways in the area by 13 percent (refer to Table 4-18). Highway levels of service could be reduced, but by an unknown amount. Operating speeds could drop, an unquantifiable increase in the number of accidents would occur, and an undetermined amount of road deterioration would occur.

## UNAVOIDABLE ADVERSE IMPACTS

Development of mineral resources such as oil and gas, tar sand, and oil shale causes surface disturbance and a modification of topography. Such disturbances can adversely affect other surface uses and resources. Approximately five percent (700 acres) of the area disturbed by mineral development would be used for production sites and facilities. These areas would be lost for forage production.

Wildlife habitats and population levels would increase under this alternative, but not to the degree available under the Resource Protection Alternative. With this alternative, wild horses would be removed from the Bonanza and Winter Ridge herd locations and managed only at the Hill Creek herd location. Additional adverse impacts under this alternative would be the same as previously discussed under the Current Management Alternative.

Above ground power and communication lines, within the designated corridors would not comply with visual resource management Class II and Class III designations. The amount of noncompliance cannot be quantified until applications are processed.



## CHAP. 4 - BALANCED USE ALTERNATIVE

TABLE 4-27

Number of Operators Affected Under the Proposed  
Plan and Degree of Impact

	Percent Increase From Existing Use and Revenues			Not Affected	Percent Decrease From Existing Use and Revenues		
	50-100	11-50	1-10		1-10	11-50	51-100
Public Rangeland Forage				30	9		
Operator Returns Above Cash Cost				30	9		

Note: Changes are based on average use over the past 3 years.



## CHAP. 4 — BALANCED USE ALTERNATIVE

Due to tar sand and oil shale development, insufficient water flows could preclude floatboating during midsummer to late fall on the White River. The White River would be depleted of 28,000 to 56,000 acre-feet of water annually. Salinity would increase by 2.6 to 5.2 mg/l at the mouth of the White River and by 1 to 2 mg/l at Imperial Dam.

An additional 16,800 to 34,800 tons of soil would be lost as a result of mineral development.

Even with mitigating measures, TSP standards could be exceeded, especially near the surface tar sand mines. Atmospheric discoloration could be visible near synthetic fuel facilities and power plants, at the Uintah and Ouray Indian Reservation, and at Dinosaur National Monument.

### IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Based on present technology, minerals mined and subsequently consumed, or left underground as unrecoverable, would be irretrievably lost. Tar sand strip mining could permanently alter the site potential on approximately 330 acres. The changes would be irreversible.

The salinity increase would be irretrievable for the duration of the water depletion from the White river.

Soils lost to surface disturbing activities would be an irreversible loss.

Some degradation of air quality would be irreversible, due to established urbanization which would remain in the area after closure of the oil shale and tar sand facilities.

A decision to select this alternative would call for conversion of additional non-Federal agricultural lands to support urban development. This would lock people into an expanding social system that in many ways would be irreversible. This, in turn, would probably solidify a differing lifestyle for area residents.

### SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

Because of the number and amount of minerals considered unrecoverable with present mining technology and practices, loss of mineral production could occur in the long term to achieve short-term minerals production.

In areas where grazing has resulted in poor ecological condition, the loss of topsoil or source of seed for perennial plants, would reduce the long-term productivity of the range.

Use of proper burning techniques would result in a short-term loss of forage in a treated area of one to three years. The long-term productivity of the area can be increased by up to three times the annual production. Chemical treatments and clear cutting would have similar short-term losses for long-term gains of forage. A total of 19,250 acres would be treated using these methods, resulting in an additional 2,000 AUMs of forage within the BCRA.

Decreasing livestock use by **21,599** AUMs and deferring spring grazing in the short term would result in a long-term improvement in ecological condition in riparian areas, floodplains, and the overall range. Although a short-term loss of forage and habitat would occur as a result of forage and habitat improvement projects, a long-term forage and habitat benefit would occur.

Mineral development could result in the long-term elimination of forage and habitat. The duration of the impacts would depend on the amount of annual precipitation and the degree of reclamation success. Reclamation could take up to 30 years, especially in areas which receive less than 10 inches of precipitation annually.

Productive woodlands lost to in situ oil shale development could amount to 590 acres and 4,300 acres could be lost to tar sand development. Wildfires occurring in pinyon/juniper stands would stop regeneration and destroy the seed source. Reestablishment of stands would be delayed 40 to 80 years. Depending on the size of the burn, the allowable cut would be reduced. Less pinyon and juniper forewood would be available for firewood cutters. Harvest of firewood would increase long-term forage production for livestock and wildlife.

Visual quality would be diminished in areas developed for tar sand and oil shale. However, after the extraction of the mineral and completion of the reclamation, evidence of the past minerals extraction activity should be reduced.

The 28,000 to 56,000 acre-feet of water used to develop two to four additional oil shale tracts would not be available for other uses, until oil shale developments are terminated.

A long-term, undetermined improvement of riparian areas and floodplains would result from short-term closure of 5,200 acres to ORV use and limiting grazing on 470 acres.

An unquantifiable amount of soil would be lost during the construction of detention-retention dams; however, their construction would reduce further soil loss by 505,000 tons over the next 10 years.

The PSD increments would be available for other projects after completion of the oil shale and tar sand development.



### CUMULATIVE SUMMARY

Direct cumulative impacts on minerals would generally be the same as were discussed under the BLM impacts for this alternative. However, it should be noted that while air quality permits and water supplies would be available for this level of tar sand and oil shale development if considered separately from interrelated projects, when considered cumulatively, air quality permits and sufficient water supplies may not be available.

Livestock forage use would be **21,599** AUMs (**21** percent) below active preference. These decreases would affect operating flexibility of the permittees (refer to the socioeconomic discussion of this section). Wildlife use would increase by approximately 3,958 AUMs above the allocated use, an increase of approximately 9 percent above the previous forage levels given to wildlife, and 257 percent of the average (current) use. The Book Cliffs deer and elk herds would be significantly increased.

BLM actions would result in an improvement in ecological condition in 38 allotments and a static condition in 16 allotments. No declines in ecological condition would occur on an allotment basis. Approximately 846,900 acres would improve in ecological condition and 268,500 acres would remain in static ecological condition. The new improvement in ecological condition class would be a change of approximately four percent, from fair to good. An estimated 1,858 AUMs would be lost due to mineral developments. Land treatments would add an estimated 2,034 AUMs of forage. A total of approximately **16,000** AUMs of forage would remain unused annually. Plant vigor would improve and ecological condition would gradually improve. In areas receiving less than 10 inches of rainfall annually, improvement would be extremely slow, requiring 30 or more years.

Wild horses would be authorized 2,340 AUMs, a change from no allocation. This would be a five percent decrease from average (current) use. The Bonanza and Winter Ridge horse herds would be removed; the Hill Creek herd would be the only wild horse herd in the BCRA.

Cumulative impacts of interrelated projects (-910 AUMs) and BLM actions (-93 AUMs) would result in a decrease of 1,003 AUMs from average livestock use. This decrease would be 36,938 AUMs below active preference.

Obtrusive development within the designated right-of-way corridors would not comply with visual resource management Class II and Class III areas. The amount of noncompliance cannot be quantified until applications are processed.

By 1995, the cumulative demand for firewood could reach 8,100 cords per year. Firewood demand would exceed the annual allowable cut by 3,830 cords annually. The BLM would not be able to supply fuelwood for slightly less than half of the people seeking it.

With the increasing population in the Uintah Basin as well as the number of big game, hunting opportunities could expand from 6,770 visitor days in 1982 to **15,670** visitor days in 1995. This would be a total increase of **8,900** visitor days, or **131** percent. The quality of hunting would be expected to remain about the same because the increase in big game animals and hunters would be proportional. Demand for all other forms of recreation, except big game hunting, would expand from the current level of 7,200 to 23,400 visitor days, or an increase of 16,200.

Sufficient undeveloped areas would be available to accommodate the increase in dispersed outdoor recreation activities such as sightseeing, camping, and river floating. Other activities requiring developed facilities would be available on adjacent State and Forest Service lands.

Cumulative water depletions would increase **to** 195,000 to 223,000 acre-feet per year or 42 to 48 percent of the average annual flow of the White River. This exceeds by 86,000 to 114,000 acre-feet the capacity of the White River Reservoir.

The cumulative increase in total dissolved solids concentration at Imperial Dam resulting from other projects and BLM actions would be 6 to 7 mg/l. This represents less than a one percent increase.

Total impacts on soil and floodplains would be the same as discussed for BLM actions.

Land ownership could change on up to **16,570** acres available for exchange or sale. Up to **18,700** acres of land could be acquired by BLM, if they become available (Figure 2-7).

Cumulative impacts to air quality for this alternative would likely exceed Class II TSP standards at Dinosaur National Monument, the Uintah and Ouray Indian Reservation, Vernal, Utah; and Rangely, Colorado. Yellow-brown atmospheric discoloration resulting from emissions of nitrogen oxides from synthetic fuel facilities and power plants would be visible on the Uintah and Ouray Indian Reservation, at Dinosaur National Monument, and near the facilities and plants. Significant, localized cumulative impacts are possible, if synfuels facilities associated with new leasing are located close to interrelated projects.



## CHAP. 4 — BALANCED USE ALTERNATIVE

Population projections for Uintah and Duchesne Counties and the communities of Roosevelt, Ballard, Vernal, Dinosaur, and Rangely show a need to accommodate a greater than 10 percent annual growth rate. The community of Myton would grow at a rate greater than five percent.

Cumulative impacts on infrastructure needs for the Balanced Use Alternative are summarized in Table 4-28.

The cumulative transportation impacts of the baseline, interrelated projects, and BLM actions are displayed in Table 4-19. All highways, except County Road 262, would provide an unsatisfactory level of service.



Table 4-28

Balanced Use Alternative  
Cumulative Infrastructure Needs  
BLM and Interrelated Projects

Socioeconomic Development Category	1985	1990	1995	2000
Population Growth				
Total	27,282	66,463	94,860	102,977
School Age	4,619	12,862	23,845	38,606
Employment Growth	15,817	34,432	42,986	43,614
Household Growth	8,264	21,234	28,623	28,945
Infrastructure Requirement				
Housing				
Single family	4,958	8,596	17,154	17,371
Multi-family	1,239	3,195	4,296	4,352
Mobile homes	2,066	5,319	7,154	7,243
Education				
Students	4,619	12,863	23,925	31,295
Classrooms	185	523	964	1,258
Teacher	185	523	964	1,258
Health Care				
Hospital beds				
General care	59	141	198	212
Long-term care	12	51	85	99
Medical personnel				
Doctors	16	51	68	70
Dentists	14	45	57	61
Nurses	46	122	167	180
Public health nurses	6	27	33	31
Medical health care				
Clinical psychologists	3	21	20	19
Methal health workers	4	23	22	23
Public Safety				
Law Enforcement				
Police officers	54	119	160	212
Patrol cars	54	119	160	212
Jail space (sq. ft.)	13,592	33,281	47,166	51,360
Juvenile holding cells	5	24	25	25
Fire Protection				
Fire flow (gpm)/ duration (hr.) <sup>a</sup>				
Emergency Medical Services				
Ambulances	6	19	33	31
Emergency medical technicians	38	184	227	218



Table 4-28 (Continued)

Balanced Use Alternative  
Cumulative Infrastructure Needs  
BLM and Interrelated Projects

Socioeconomic Development Category	1985	1990	1995	2000
Utility Service Demands				
Water System				
Connections	8,769	21,399	30,441	33,143
Supply (10 <sup>6</sup> gal./yr.)	5,121	12,498	17,777	19,355
Storage (10 <sup>6</sup> gal./yr.)	2,561	6,248	8,890	9,677
Treatment (10 <sup>6</sup> gal./yr.)	5,121	12,498	17,777	19,355
Sewage System (10 <sup>6</sup> gal./yr.)	992	2,417	3,443	3,749
Solid Waste Acres/Yr.	5.9	14.1	20.0	21.6

Source: BLM 1983h.

<sup>a</sup>Fire protection measured in fire flow (gpm)/duration (hr.) cannot be aggregated across the affected counties.



# Chapter 5

## PUBLIC REVIEW AND RESPONSE









# CHAPTER 5

## PUBLIC REVIEW AND COMMENTS

The Draft Environmental Impact Statement on the Book Cliffs Resource Management Plan was filed with the Environmental Protection Agency on June 1, 1984. The EPA published a notice of availability on June 15, 1984 which commenced the 90 day public comment period. Notices of the public hearing to allow the public to comment on the adequacy of the Draft EIS were announced by the U. S. Department of Interior (USDI) in the Federal Register on May 24 and August 2, 1984. News releases and newsletters were issued to alert local residents about the public hearings and the comment period for the Draft EIS. September 13, 1984 was established as the deadline for submission of written comments. A partial list of agencies, organizations, and individuals who received the Draft EIS and were invited to comment is included in this Final EIS. A complete list is available for public review at the Vernal District Office, 170 South 500 East.

The Vernal District Advisory Council held a meeting on July 25, 1984 to discuss the Draft EIS. Notice of this meeting was published in the Federal Register on June 19, 1984 and advertised in local electronic and printed media.

The public hearing was held at the Vernal District office on July 17, 1984. Copies of the complete hearing transcript are available for public review at the Vernal District Office.

All written comments and oral testimony from the public hearing have been reviewed for consideration in the Final EIS. Those comments which presented new data, questioned the facts or analysis presented, or raised questions or issues which directly related to the scope of the Draft EIS, have been given a response. Testimonies or letters which were general or indicated a preference for one or more of the alternatives, have been included in the public comment section of this document, but have not been given a response. Comments which were received too late for inclusion in the Final EIS will be given consideration in the decision making process.

### PUBLIC COMMENT: ORAL & WRITTEN

#### Oral Comments

Eight persons commented at a public hearing held July 17, 1984 and convened for the purpose of receiving comments on the Draft Book Cliffs Resource Management Plan and EIS. Their names are listed below under "Oral Commentors at Public Meetings". Their comments and BLM's responses are displayed following the comment letters section.

#### Comment Letters

During and after the 90-day public comment period, BLM received 151 letters regarding the Draft RMP. One of the letters was a form letter, of which BLM received 120 copies with original signatures. For the sake of convenience, the form letter is only identified once in the list entitled "Comment Letters". The letters and BLM's responses are displayed following the index of comment letters.

### ORAL COMMENTS AT PUBLIC MEETING

#### COMMENTORS:

Jon Hill  
Dean Chew  
Nick Theos  
Meril Snow

Ken Young  
Katherine A. Smith  
H. E. Graham  
Jim Tomlinson

### COMMENT LETTERS

COMMENTOR/SIGNATURE	LETTER NO.
Benny Holmes .....	1
Celcius Energy Co. (Tripp) .....	2
Conoco, Inc. (Birdsall) .....	3
Bureau of Reclamation (Allen) .....	4
Chevron (Hughes) .....	5
Utah Division of State History (Dykman) .....	6
Cody Jenkins .....	7
Uintah Cattlemen's Assoc. (Gentry, plus 119 others) ....	8
Texaco-Denver (Stanton) .....	9
Shell Mining Co. (Mahaffy) .....	10
Tosco Corporation (Shay) .....	11
Wildlife Management Institute (Poole) .....	12
U.S. Nuclear Regulatory Commission (Vollmer) .....	13
E. Vaughn & Ervin Wilkins .....	14
Bureau of Mines (Jinks) .....	15
U.S. Geological Survey (Devine) .....	16
Sierra Club (Catlin & Scott) .....	17
Gary Sprouse Ranches .....	18
Meril G. Snow .....	19
Uintah County Commission (Merrill, Domgaard, Snow) ..	20
Aaron C. Woodward .....	21
Atlantic Richfield Co. (Briggs) .....	22
Utah Division of Wildlife Resources (Smith) .....	23
Department of the Air Force (Lammi) .....	24
Utah Nature Study Society (Hovingh) .....	25
Amoco Production Co. (Anderson) .....	26
Exxon Company, U.S.A. (Praetorius) .....	27
Mountain Fuel Resources, Inc. (Flaim) .....	28
U.S. Environmental Protection Agency (Hoffbuhr) .....	29
National Park Service, USDI (Strait) .....	30
Mobile Alternative Energy, Inc. (Higgins) .....	31
State of Utah, Office of the Governor (Governor Matheson)	32

There is a 30-day period provided for public protests on this Final EIS. If no protests are received, a formal Record of Decision will be issued following completion of the 30-day comment period.



# ORAL COMMENTS & B.L.M. RESPONSES

## comments

## responses

### ORAL TESTIMONY COMMENTS

Comment 1: Jon Hill

"The justification for a 30 percent reduction in grazing is based on the assumption that these are the number that livestock operators prefer to run."

Comment 2: Jon Hill

"The years from 1975 to 1982 should not be used as the only criteria for setting stocking levels, as operators have been faced with severe drought, hard winters, and economic stress."

### RESPONSES

Response 1:

The grazing numbers presented in this document do not indicate a reduction or increase in livestock grazing preference. This document indicates a level of grazing use that would be monitored for the next five years. The permittees will be encouraged to participate in this monitoring process. As stated on pages 74 and 75 of the DEIS, reductions or increases in livestock grazing would only be implemented based upon the resource conditions as determined by monitoring. Adjustments would be made by mutual agreement or by BLM decision.

Each operator has been given the opportunity to review the proposed level of livestock use for their allotment(s). Where the average use figures would be too low to satisfy an operator's projected use, they were allowed to increase their use level up to active preference for the monitoring period.

Response 2:

The years of 1975-1982 were used to evaluate livestock average use. This period includes years prior to the drought of 1977. The average livestock use was based on an average of livestock use during three representative years during this period of time. It was assumed that this average number would be near



## comments

Comment 3: Jon Hill

"On page 147 of the Draft EIS, it states that lower stocking levels may actually impose greater hardship on plants by overgrazing in localized areas, such as waterholes."

Comment 4: Jon Hill

"There were 38,867 AUMs allocated to wildlife, of which 22,891 are currently in nonuse. These figures show that these AUMs are available for wildlife; however, no consideration has been taken of suitability, including distance to water, etc. Range and water improvements are the things that need to be worked on, not stocking levels."

Comment 5: Jon Hill

"The land can be reclaimed and improved after mineral development. With a well-thought plan of management, wildlife and livestock would not be greatly affected, or could actually increase due to increased forage and accessibility."

## responses

what the operator would run on his permit for the next five years.

Response 3:

This statement cannot be found on page 147. However, it is correct that reducing livestock numbers may not improve the ecological condition in localized areas such as waterholes, if the reduction does not change the season of use or sufficiently reduce the livestock numbers.

Response 4:

There are both range and water improvements proposed for livestock under all alternatives except the Current Management Alternative.

Response 5:

It is true that following reclamation of areas developed for minerals, forage produced could be equalled and, in the highly productive areas, forage could increase. However, if mineral development were to take place over a ten-year period, as assumed in the RMP, more forage would be taken out of production than would be reclaimed.



## comments

Comment 6: Dean Chew

"Well, some people got put out of business and some of the rest of us acquired those permits and they were a little bit more than we could handle at the time, ... so it threw our whole operation out of balance. I mean summer permits weren't cut as bad as the winter permits, so the winter permits threw out of balance our summer, because we had more AUMs in the winter country ... Most of us that had those permits thought that we would be able to balance our operation out."

Comment 7: Dean Chew

"... because of droughty conditions, we got off the range and didn't go out on there, but maybe ten percent or something like that, and that puts it almost to zero for that particular year's use; ..., so we shouldn't be penalized for a droughty year."

Comment 8: Dean Chew

"I feel like there's impacts on the grazing people or on the public that are not in there that you guys probably want in there. In other words, such things as -- as the Mormon crickets, ... I didn't see that in there, or whether the coyotes take us over."

## responses

Response 6:

If monitoring of livestock use shows that the range could accommodate more livestock, then more livestock would be allowed. A balance of forage with livestock, wildlife, and wild horses is desired. Each permittee was contacted prior to issuance of the final document and adjustments were made in the livestock use that would be monitored. The proposed plan reflects these changes.

Response 7:

Only three representative years during the eight-year time frame were used to calculate the average use. The drought year or years were not used as part of the representative three years.

Response 8:

The BLM recognizes that high populations of Mormon crickets and coyotes can adversely affect ranch operations through consumption of forage and predation of livestock. The BLM does not have authority to control either of these species. Insect outbreaks are controlled by the Animal and Plant Health Inspection Service, U.S. Department of Agriculture and



## comments

Comment 9: Dean Chew

"... there's a certain amount of impact on us because of the road (Highway 45) being there. That's not mentioned in this book anywhere that I found."

Comment 10: Nick Theos

"My comments are on renewable resources versus environmental consequences. Oil and gas drilling and mining, including roads, pipelines, ... will affect very few acres after reseed-ing, ... especially if your road was fenced, you wouldn't have any problem. In fact, it might be better after the distur-bance. Therefore, no one long-term livestock grazing reduc-tions should be anticipated for mining or drilling."

## responses

coyotes are controlled by the Area's Damage Control Division of the U.S. Fish and Wildlife Service. The BLM is willing to allow treatments of these species; however, because BLM does not have decision authority for resolving these problems, they have not been included in the alternatives.

The text has been revised to reflect this concern.

Response 9:

The impacts of this highway construction project were discussed in a previous environmental assessment.

Response 10:

Refer to public hearing response number five.



## comments

Comment 11: Nick Theos

"Number two. The livestock operators in this area some 20 years ago took a voluntary reduction of ADUs, and I think it averaged in this Bookcliff area over 15 percent for wildlife use. I feel that that was sufficient, especially when the suspension of nonuse was taken."

Comment 12: Nick Theos

"Distribution of wildlife is a problem. I don't think there's that many animals up there, but they congregate in certain areas. If you could get some of those game and fish guys to go out there and scatter them like we do our sheep and cattle, I don't think you would have a problem."

Comment 13:

"No reductions of livestock -- of domestic livestock for wild horse herds are necessary."

## responses

Response 11:

Refer to public hearing response number one.

Response 12:

Your suggestion for wildlife management should be made to the Utah Division of Wildlife Resources. Where monitoring indicates competition for forage is resulting in over utilization, the BLM will consult with the permittee and the UDMR to resolve the problem.

Response 13:

The CFR 4730.3 states, "After determining the optimum number of such horses and burros to be maintained on an area, the authorized officer shall reserve adequate forage and satisfy other ecological requirements of such horses and burros and when necessary, adjust or exclude domestic livestock use accordingly."



## responses

Response 14:

The text has been corrected to read 136 AUMs of spring use.

Response 15:

Wild horses were included in the Resource Protection Alternative because they have intangible aesthetic values for some persons or groups rather than producing economic returns as was considered under the Commodity Production Alternative.

Response 16:

Refer to public hearing response number eight.

Response 17:

Refer to public hearing response number one.

## comments

Comment 14: Meril Snow

"... I didn't understand ... page A5-7. It said: Reduce spring grazing by 222 AUMs to improve ecology condition.

The present grazing on that is only 135 AUMs in the spring. Maybe that is the use in the fall."

Comment 15: Meril Snow

"I don't know how you can maximize wild horse use and be in resource protection."

Comment 16: Meril Snow

"I didn't see in this statement that we have this problem on Blue Mountain, is the crickets and also I didn't see in the statement anything about the prairie dog. Both of these are very detrimental to range."

Comment 17: Ken Young

"To reduce, I think, would be very hard on us -- I should say the livestock producers -- if we was to go reduced and penalized for nonuse on these permits ..."



Comment Letter 1

Dear Sir - 7-13-84

1.1 We do not need any more  
cows in our grazing lease -  
I cannot run enough cows  
on our lease as it is.

If they cut our grazing to  
30% most people will go  
North - My grazing point  
is in good shape -

Benny Holman  
Vandeventer

84078

5000 So - 5005 -

BLM Letter Response 1

1.1

The grazing numbers presented in this document do not indicate a reduction or increase in livestock grazing preference. This document indicates a level of grazing use that would be monitored for the next five years. The permittees will be encouraged to participate in this monitoring process. As stated on pages 74 and 75 of the DEIS, reductions or increases in livestock grazing would only be implemented based upon the resource conditions as determined by monitoring. Adjustments would be made by mutual agreement or by BLM decision.



# CHAP. 5 — PUBLIC REVIEW AND COMMENTS

Comment Letter 2

BLM Letter Response 2



**CELSIUS ENERGY COMPANY**

79 SOUTH STATE STREET • P.O. BOX 11070 • SALT LAKE CITY, UTAH 84147 • PHONE (801) 530-2600

July 11, 1984

MR. CURTIS TUCKER  
BOOK CLIFFS RESOURCE MANAGEMENT  
PLAN TEAM LEADER  
BUREAU OF LAND MANAGEMENT  
170 SOUTH 500 EAST  
VERNAL UT 84078

RE: Comments on Draft Book Cliffs Resource Management  
Plan/Environmental Impact Statement

Dear Mr. Tucker:

Mexpro/Celsius Energy Company is actively involved in hydrocarbon exploration within the Book Cliffs Resource Area. Due to both structural and stratigraphic entrapment of hydrocarbons and numerous productive reservoirs, it is this company's belief that the entire Book Cliffs Resource Area has substantial hydrocarbon potential which should be developed to its fullest extent. This excellent potential has been proven by the extremely high success ratio present throughout the area. Marginal drilling economics in this region would be adversely impacted by the special stipulations outlined under the preferred Balanced Use Alternative.

Mexpro/Celsius Energy Company recommends the Commodity Production Alternative be implemented in the Book Cliffs Resource Area. This alternative will allow operators to develop the hydrocarbon potential of this area to its greatest extent and allow them to earn a fair return on their investment capital.

Thank you for your time and consideration in this matter.

Sincerely,

Carol N. Tripp  
Geologist

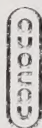
ltr

Thank you for your comments. Your views will be given consideration in making the final decision on the Resource Management Plan.



Comment Letter 3

BLM Letter Response 3



E. Fred Birdall  
Public Lands Coordinator

Canoco Inc.  
2500 W. 1st Avenue  
Denver, CO 80202  
(303) 781-6123

July 17, 1984

Mr. Curtis Tucker, Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, UT 84078

Dear Mr. Tucker:

Re: Book Cliffs RA Draft RMP/EIS

This letter is in support of your preferred alternative #4 - Balanced Use.

I commend you on a thoughtfully written and well-documented draft RMP. I believe you have indeed attempted and achieved a balanced plan which fairly recognizes the general needs of all your land users. I particularly appreciated Tables 4-7 and 8, Accrue Conflicts Between Category Designations and Oil & Gas Favorability Areas. This was, to me, an excellent, graphic method for overview of the minerals conflicts, and nicely clarified by the oil and gas favorability maps of Chapter 3.

All told, a good job.

As you know, RMOGA has encouraged the use of the "matrix" process in determination of the likelihood of exploration under each alternative. Using the data on page 151 of the RMP, I rearranged and calculated as follows (in 000s of acres).

Alternative	Access Restrict	Geologic Potential		
		H	M	L
Current Situation	W/d	0	12	4
	NSO	6	21	5
	Spec. Std.	27 117	159 653	0 23
Resource Protection	W/d	3	5	0
	NSO	10	38	3
	Spec. Std.	68 69	385 417	26 3
Commodity Production	W/d	0	0	0
	NSO	0	3	0
	Spec. Std.	4 146	29 813	2 30

Thank you for your comments. Your views will be given consideration in making the final decision on the Resource Management Plan.



BLM Letter Response

Comment Letter 3

Mr. Curtis Tucker, Team Leader  
Page 2  
July 17, 1984

Balanced Use	W/d	0	7	0
	NSO	1	7	1
	Spec.	47	363	3
	Std.	102	475	28
Max	W/d	0	0	0
	NSO	0	0	0
	Spec.	0	0	0
	Std.	150	845	32

Using the matrix multipliers

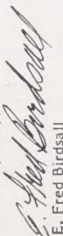
0	0
3	1
6	2
9	3

I calculated indices of

	Index	%
Current Situation	5.70	90
Resource Protection	5.10	80
Commodity Production	6.26	99
Balanced Use	5.46	86
Maximum	6.34	100

I found this to be a personally useful exercise. In review of your tabulations 4-7 and my subsequent analysis, I do find the preferred alternative to be satisfactorily responsive to oil and gas issues.

Yours very truly,

  
E. Fred Birdsal

bp





United States Department of the Interior  
BUREAU OF RECLAMATION  
UPPER COLORADO REGIONAL OFFICE  
P.O. BOX 11568  
SALT LAKE CITY, UTAH 84147

DATE  
REF TO

UC-150

120.1

JUL 18 1984

Memorandum

To: Mr. Curtis Tucker, Book Cliffs Resource Management Plan Team  
Leader, Bureau of Land Management, 170 South 500 East,  
Vernal, Utah 84076

From: Regional Director  
Bureau of Reclamation

Subject: Review of Draft Environmental Impact Statement on Book Cliffs  
Resource Management Plan (DES 84/30)

We have reviewed the subject Draft Environmental Impact Statement and concluded that implementation of any of the viable alternatives would not impact any Bureau of Reclamation projects. It is our understanding that all the water required for development aspects would come from the White River where we have no direct involvement.

4.1

*Pat H. Allen*

cc: Commissioner, Attention: WO-150

4.1

This document assumes that water for oil shale development would be taken from the White River (page 145). If future development proposals involve possible water use from other sources, the Bureau of Reclamation will be consulted.





**Chevron U.S.A. Inc.**  
700 South Colorado Blvd., P. O. Box 599, Denver, CO 80201

Richard T. Hughes  
Staff Analyst  
Legislative and Regulatory Affairs

July 24, 1984

Mr. Curtis Tucker  
Bureau of Land Management  
170 South 500 East  
Vernal, UT 84078

Dear Mr. Tucker:

As an oil and gas producer, Chevron is interested in the approach BLM Resource Management Plans to take in considering the oil and gas resource. While there may be a number of ways to consider oil and gas in the planning process, we believe the most meaningful methods are those which first recognize the relative oil and gas potential and then consider that potential in making surface use decisions which might affect development of that potential.

The BLM Washington Office recently circulated to State Directors Program Specific Guidance for fluid mineral leasing input into RMPs (Information Bulletin 84-261 dated June 21, 1984). While we do not believe this is a perfect system, nor is any system likely to be perfect, this system does incorporate the concepts discussed above. Thus, we would encourage you to use this system in your final plan.

Sincerely,

RTH:md

Central Region - Exploration, Land and Production

Thank you for your comment.

## 5.1

Although this document has not used the specific planning system mentioned (Washington Office Bulletin 84-261), it includes a similar system which considers oil and gas potential when making surface use decisions as is shown in Table 4-7. Other methodologies also exist for assessing oil and gas potential. See letter No. 3 from Conoco, Inc.





August 2, 1984

Curtis Tucker  
Bureau of Land Management  
170 South 500 East  
P. O. Box F  
Vernal, Utah 84087

RE: Book Cliffs Draft EIS

In Reply Refer To Case No. H137

Dear Mr. Tucker:

The Utah Preservation Office has received for consideration a copy of the draft environmental impact statement for the Book Cliffs Resource Management Plan. After review of the material, our office notes that cultural resources are not considered an area of controversy by the document itself, and therefore the material relating to cultural resources is extremely brief.

Our only comment that may be considered by the BLM is that there appears to be no management plan for cultural resources, if they do become a problem. For example, what kind of inventory is proposed in the affected areas, and if these areas are going to be fully surveyed with Class III surveys or Class II surveys. If it is not considered an area of controversy, we believe that there should be some consideration given to future planning for projects in the area.

Since no formal consultation request concerning eligibility, effect or mitigation as outlined by 36 CFR 800 was indicated by you, this letter represents a response for information concerning location of cultural resources. If you have any questions or concerns, please contact me at 533-7039.

Sincerely,

James L. Wyman  
Cultural Resource Advisor  
Office of State Historic  
Preservation Officer

JLD:jrc:H137/0648V

State History Board: Mickey C. Adams, Chairman • Thomas G. Alexander • Philip A. Bueren • J. Edm. Dorman • Elizabeth Gullin • Wayne A. Hodge • David E. Johnson • Warren Z. Prosser • Richard A. Tapp

6.1

Refer to pages 75, 120, 124, 137 and 148 of the DEIS for discussion of cultural resources.

A management plan for cultural resources is not written unless an area, site, or property is identified in the BLM planning system as being important enough to warrant this action.

Antiquity laws, executive order, and implementing regulations dictate that the BLM will inventory all proposed actions at a class III level unless it has been previously determined that such an inventory would be beyond a "rule of reason".

The area covered by the Book Cliffs Resource Management Plan has been sampled at a Class II level utilizing a predictive model that delineates "zones of sensitivity". These studies are: 1) The Red

Wash, 2) Sheep Ridge, 3) Oil Shale, and 4) Split Mountain studies.

The studies have identified sets of environmental variables that identify locations which may produce archaeological materials. The BLM utilizes these variables to determine if an inventory is needed prior to the initiation of granting a license, application, etc., for a ground-disturbing project. In the low sensitivity zone, there are certain environmental settings which contain sites. If a project is proposed that will impact one of these areas, a clearance is needed. Cultural resources were not identified as an issue because of existing legislation which requires that cultural resources be considered in any application for land use where that use could conceivably impact an unknown property, site, or structure.

Large scale projects will require a cultural resources mitigation plan to be developed prior to initiation of ground-disturbing activities. It is recognized that some sites, structures, or properties may be destroyed or altered by development even with a mining plan. To alleviate such losses, a thorough inventory will be required which will cover the area of direct impact and a "reasonable" buffer zone. Section 106 procedures will be followed when it appears a site, structure, or property will be impacted.





**UINTAH CATTLEMEN'S ASSOCIATION**

Room 305 Uintah County Bldg.  
VERNAL UTAH 84078  
August 14, 1984

Mr. Curtis Tucker  
Bookcliff Resource Management Plan Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal UT 84078

Dear Sir :

We would like to support the alternatives of commodity production and balanced use as written in the Environmental Impact Statement with the exception of the proposed reduction in grazing in the balanced use proposal.

7.1

The action taken by the BLM would reduce an operator's permit to the average ADUs of three representative years between 1974 and 1982. As we all know, these were not the best years for keeping our livestock numbers up to our permits, and should not be used as criteria for setting stocking levels.

The grazing reduction is not based on proper range management techniques, and therefore is unacceptable.

Thank you.

Sincerely,  
*Cody Jenkins*  
Cody Jenkins, President  
Uintah Cattlemen's Assn.

CJ:dc1

Thank you for your comment.

7.1

Refer to letter response 1.1.

The years of 1975-1982 were used to evaluate livestock average use.

This period includes years prior to the drought of 1977. The average livestock use was based on an average of livestock use during three representative years during this period of time. It was assumed that this average number would be near what the operator would run on his permit for the next five years.



Comment Letter 8



**UINTAH CATTLEMEN'S ASSOCIATION**

Room 305 Uintah County Bldg.  
VERNAL, UTAH 84078  
August 13, 1984

Bureau of Land Management  
170 South 500 East  
Vernal UT 84078

Re: Reduction in Grazing

Attn: Bookcliff Resource Management Plan Team Leader

Dear Sir:

As a Uintah Cattlemen's Association member, I would like to support the alternatives of commodity production and balanced use as written in the Environmental Impact Statement, with the exception of the proposed reduction in grazing in the balanced use proposal.

**8.1** The grazing reduction is not based on proper range management techniques and therefore is unacceptable.

Sincerely,

*Allen Gentry*

NOTE: This is a form letter. The District received a total of 120 of them, each bearing an original signature. A few of the signatures were very difficult to read, so please forgive any spelling errors in the list below. Besides Allen Gentry, we received a letter from the following 119 persons:

H Maughan Coulton	Phyllis Oberhansly	Norlene C Batty
Paul W McCoy	Mark Oberhansly	Ana R Batty
Joe Haslem	Ron Richens	Arden W Stewart
Neal Gawain Snow	Edward Colton	Frank Reynolds
Vaughn Wilkens	Craig Caldwell	Donna Rae Stewart
Manda L Staley	Jim Caldwell	Vickie S Batty
Dorothy Rasmussen	Don M Walker	Morgan W Batty
Garth Horrocks	Leo Snow	A C Wilkerson
Owen Powell	Ed W Oscarson	Ira W Massey
Jimmy Caldwell	Bart Batty	Owen Nelson
Ralph Prescott	Julian A Massey	Bertha Wilkerson
Gene Nyberg	Joe Omar Batty	Edna Nelson
Bernard Oberhansly	Perry Mace	Dee Jenkins
Verona Prescott	D Linford Batty	Shirley Oldaker

BLM Letter Response

Thank you for your comment.

**8.1** Refer to letter responses 1.1 and 7.1.



Carl L Oldaker  
 Scott McCarrell  
 Rayma McCarrell  
 David Jenkins  
 Merle Jenkins  
 Thelma Morrill  
 Davis Morrill  
 Clara Jenkins  
 Velma Wilkens  
 Grant L Hacking  
 Boyd R Snow  
 Jack B Buppe  
 Hayden C Harrison  
 Mildred B Hacking  
 James B Goodman  
 Lea H Goodman  
 John Haslem  
 Ronald Duncan  
 Mary Duncan  
 Floyd Massey  
 Geneva Massey  
 Jay Searle  
 Marilyn Hunting  
 Dale Snow  
 Ray Hunting  
 Janiel Gardner  
 Dorothy C Luck  
 Lance E Luck  
 Maurine Luck  
 Clifton Johnson  
 Shirley Ainge  
 Don Anderson  
 Loyal Cox  
 Odean Cox  
 Burt DeLambert  
 Ronald Dudley  
 M F Hamaker  
 Clark McKee  
 Ralph McKee  
 M Peterson  
 LaRue Pickup  
 Louis Rasmussen  
 Frank Reynolds  
 Ron Richens  
 Glen Huber  
 Kenneth Huber  
 Joann Huber  
 Martin Huber  
 Dean Johnson  
 Orson Johnson  
 Jiggs Johnson  
 Clifton Johnson  
 Marvin Jackson  
 Brent Jackson  
 Lorn Kuppe  
 Joseph D Slaughter  
 Draw Christiansen  
 Ned Reynolds  
 Arthur Soderquist  
 Dwain Soderquist  
 Max Todd  
 Jim Tomlinson  
 Verlin Vincent  
 Scott Wall  
 Everett West  
 Jim Tomlinson  
 Troy Burton  
 Howard Gardner  
 Doris Burton  
 Delbert Horrocks  
 Verli Haslem  
 Katie Duncan  
 Hank Peltier Jr.  
 Ralph Walker  
 Pauline Walker  
 Laurence E Caldwell  
 John Jorgensen  
 Kenneth Jennings



Comment Letter 9

PRODUCING DEPARTMENT  
DENVER DIVISION

TEXACO  
U.S.A.  
A DIVISION OF TEXACO INC.  
1700 BROADWAY  
DENVER, COLORADO 80201

August 22, 1984

BLM Planning Process  
Book Cliffs Resource Area

Mr. Curtis Tucker, Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

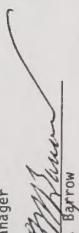
Dear Sir:

Attached is an Energy and Mineral Resources Evaluation covering the Bull Canyon (VT-080-417) and Winter Ridge (VT-080-730) Wilderness Study Areas. You will note that both areas have high potential for oil, gas and oil shale.

While there is no objection to tallying these evaluations with other evaluations to arrive at a consensus of mineral values, this specific evaluation should be treated as confidential and not released to the public.

Yours very truly,

RICHARD W. STANTON  
Land Manager

By   
G. W. BARTON

GHB/jac  
Enclosure

BLM Letter Response 9

Thank you for your comments. Your views will be given consideration in making the final decision on the Resource Management Plan.



## Comment Letter 10



**Shell Mining Company**

P.O. Box 2906  
Houston, TX 77252

Jack L. Mahaffey  
President

Mr. Curtis Tucker  
RMP Team Leader  
Bureau of Land Management  
Book Cliffs Resource Area  
170 South 500 East  
Vernal, UT 84078

August 27, 1984

Dear Mr. Tucker:

SUBJECT: COMMENTS ON DRAFT RMP/EIS FOR BOOK CLIFFS RESOURCE AREA

Shell Mining Company believes that the Draft RMP/EIS for the Book Cliffs Resource Area has several positive aspects. We are particularly impressed with the following features of the Draft RMP/EIS:

- The excellent graphics and maps.
  - The thorough discussion of all land management alternatives.
- We are, however, concerned with some of the language and concepts contained within the Draft RMP/EIS. Our most serious concerns with the Draft RMP/EIS are as follows:
- The apparent restrictions on the ability of future federal lessees to select the most appropriate oil shale development method.
  - The unnecessarily restrictive area from which industry would be able to nominate tracts for federal oil shale leasing.
  - The apparent lack of flexibility to process future land exchange proposals.

Details on the three above-listed concerns are provided in an attachment to this letter.

We appreciate the opportunity to outline our concerns with the Draft RMP/EIS and we hope the ideas expressed in this letter will be useful to the BLM in developing the Final RMP/EIS for the Book Cliffs Resource Area.

If you have any questions regarding the concerns presented in this letter or its attachment, please call Mr. Kenny Schmidt at (713) 670-2840.

Sincerely,

Jack L. Mahaffey

KJS:CC

Attachment

## BLM Letter Response



Comment Letter 10

ATTACHMENT

SHELL'S CONCERNS WITH DRAFT RMP/EIS  
FOR BOOK CLIFFS RESOURCE AREA

SHELL'S CONCERN: *Apparent Restrictions on the Ability of Future Federal Lessees to Select the Most Appropriate Oil Shale Development Method*

10.1

In the Draft RMP/EIS, the BLM appears to be establishing a policy that would severely limit the ability of future lessees to choose the most appropriate technology, or mix of technologies, for developing the federal oil shale deposits of the Uinta Basin. Specifically, certain portions of the Draft RMP/EIS could easily be interpreted as proposing to:

- a) Prohibit use of any oil shale technology other than underground mining/surface retorting in the central Uinta Basin.
- b) Prohibit use of any oil shale technology other than true in-situ (in effect, just Geokinetic's LOFRECO process) along the southern rim of the Uinta Basin.

We strongly believe that the BLM should refrain from establishing any policy limiting the ability of a federal oil shale lessee to select, with BLM approval, the technology, or mix of technologies, that would be:

NE8421215

BLM Letter Response

10.1

The purpose of the RMP-EIS, in relation to oil shale development, was to provide suitable areas for the next round of oil shale leasing.

In order to access the general types of impacts, it was necessary to anticipate the general type of technology that would be used. Underground room-and-pillar mining with surface retorting is proposed for the Tosco, Magic Circle, White River Shale, Paraho, and Quintana oil shale projects. No other type of project has been proposed for the deeper oil shale deposits of the central Uinta Basin. This is the reason that this type of mining was anticipated for the purpose of environmental analysis.

The possibility exists that another type of known technology, such as modified in-situ (see page 141) or currently unknown technology, could be employed to develop the delineated tracts. Any environmentally acceptable technology could be employed as long as the impacts are within the scope of those predicted in the RMP-EIS.

The same philosophy would be true for the shallow oil shale deposits in the south central portion of the Uinta Basin. Although it is anticipated that an in-situ process similar to the geokinetics process would be used, other environmentally acceptable proposals would be considered.



BLM Letter Response

Comment Letter 10

2

- a) Most suited to the specific lease tract conditions.
- b) Most responsive to the socioeconomic, environmental, and technological constraints existing at the time of lease tract development.

In light of the above, we suggest that BLM modify the "Oil Shale" discussions on pages 40, 53, 60, 161, 181 and 196 to clearly allow the use of any oil shale development technology that would be suited to site-specific conditions and represent a socially responsible use of the land and mineral resources of the lease tract. The figures on pages 44, 55, and 64 should also be changed to ensure that the RMP/EIS consistently provides future federal oil shale lessees with the ability to select appropriate development technologies.

SHELL'S CONCERN: *Unnecessarily Restrictive Area from Which Industry Would be Allowed to Nominate Tracts for Oil Shale Leasing.*

10.2

We believe that the process of delineating oil shale tracts for federal leasing would be adversely affected if any of the four alternatives presented in the Draft RMP/EIS were implemented. Specifically, implementation of any of the four alternatives (even the Commodity Production Alternative) would severely constrain the process of delineating oil shale tracts for leasing, since only a small portion of the potentially attractive oil shale lands in the Uinta Basin would be made available for leasing. Limiting the availability of lands for leasing would hamper industry's ability to nominate tracts that are responsive to the many factors (technological, economic, environmental, and socioeconomic) affecting the development of oil shale.

NE8421215

10.2

Depending on the alternative, up to 98,000 acres could be delineated as priority management areas for future oil shale leasing. The alternative areas were delineated to provide suitable leasing areas for the next round of oil shale leasing. The intent was not to provide areas for multiple leasing efforts, although the designated areas may provide for this.

The areas were selected in locations with the highest quality oil shale deposits that had less than 2000 feet of overburden. This was based on the best available information and a formal call for Expressions of Interest in oil shale development. If there are additional areas that would be suitable for subsequent leasing efforts, a second call for Expressions of Interest should be responded to, so future planning efforts can react accordingly.



Comment Letter 10

3

Since the above-mentioned factors affecting oil shale development are likely to be constantly changing, the types of oil shale lands attractive to industry are also likely to be constantly changing. As such, BLM should not premise its Book Cliffs RMP on current guesses as to which federal oil shale lands in the Uinta Basin are most likely to be in demand for leasing in the 1990's and beyond. Rather, we believe the RMP should be used as an opportunity to make available for leasing all those federal oil shale lands that meet certain minimum resource criteria - such as the criteria used to formulate Figures 3-3 and 3-4 in the Draft RMP/EIS.

We are not advocating that all the federal oil shale lands of the Uinta Basin be offered in an actual lease sale or sales. However, we are suggesting that industry be given as large an area as possible from which to nominate tracts for leasing. The tract nomination and ranking process (probably administered by the Regional Oil Shale Team) should provide adequate opportunity for industry, state/local governments, and the public to provide input to the BLM as to the most appropriate tract or tracts for actual leasing.

The gray-shaded areas on Figures 3-3 and 3-4 of the Draft RMP/EIS appear to be the federal oil shale lands that should be made "available" for leasing. At a minimum, the thick oil shale strata of the Uinta Basin depocenter should be made available for leasing. Specifically, that portion of the KOSLA (shown on Figure 3-4 of the Draft RMP/EIS) that lies north of the White River and west of Utah State Highway 45 appears to contain:

NE8421215

BLM Letter Response

10.3

The delineated areas were located where overburden was less than 2000 feet. This assumption was based on the current central Uinta Basin projects which, with minor exceptions, are all located in areas with less than 2000 feet of overburden. To date, no other interest has been expressed in the deeper deposits. New technology may allow development of these deposits, and therefore these deposits could be delineated in subsequent land use planning efforts and associated leasing.



Comment Letter 10

4

- The thickest Mahogany Zone in the Uinta Basin.
- The highest in-place, shale oil resource per unit area in the Uinta Basin.

Because of the two above-mentioned attributes, we believe the Uinta Basin depocenter is a potentially attractive area for future oil shale leasing. Accordingly, we believe BLM should ensure that such potentially attractive oil shale lands are not precluded from the tract nomination and ranking process as a result of limitations established during the RMP process.

In conclusion, we suggest that BLM modify the Draft RMP/EIS to maximize the federal lands "available" for oil shale leasing. By providing more tract nomination possibilities, BLM would ensure that the most appropriate lands are actually offered for lease sale. The actual lease tract or tracts offered for sale should be determined through a site-specific tract nomination and ranking process, with adequate opportunity for public comment.

SHELL'S CONCERN: *Apparent Lack of Flexibility to Process Future Land Exchange Proposals.*

The "Land Tenure Adjustment" discussions on pages 168, 185, and 201 appear to leave BLM with little flexibility for handling exchange proposals that would involve lands not delineated for disposal in the Draft RMP/EIS. We suggest that the appropriate portions of the Draft RMP/EIS be modified to provide BLM with the flexibility to process any land exchange proposal that

NE8421215

BLM Letter Response

10.4 The potential land disposals or exchanges and land acquisitions displayed in the various alternatives were delineated with the intent of providing better management of the public domain.

There is potential for land exchange proposals that would be initiated by an individual, government agency, or corporation that were not indicated within this document. These proposals would require planning amendments and site specific analysis.



## BLM Letter Response

## Comment Letter 10

5

would be found to be in the public interest pursuant to the regulations of 43 CFR Part 2200. To address our suggestion, the Draft RMP/EIS could be modified to present the policies, procedures, and guidelines that would control the processing of future land exchange proposals involving lands in the Book Cliffs Resource Area.

NE8421215



Comment Letter 11

TOSCO CORPORATION  
SUITE 2000 STELLAR PLAZA  
1089 EIGHTH STREET  
DENVER, COLORADO 80202  
303/292-2312

August 29, 1984

CORPORATE OFFICES  
FEDERAL BUREAU OF LAND MANAGEMENT  
SANTA MONICA, CALIFORNIA 90406  
310/397-6000

Mr. Curtis Tucker  
Book Cliffs Resource Management  
Plan Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Re: Draft Book Cliffs Resource  
Management Plan/Environmental Impact Statement

Dear Mr. Tucker:

As you know, Tosco Development Corporation, a wholly owned subsidiary of Tosco Corporation, is presently planning a major oil shale project on 17,000 acres of oil shale leases from the State of Utah in the central portion of the Book Cliffs Resource Area. Representatives of Tosco have carefully reviewed the draft Resource Management Plan ("RMP"). We commend the Bureau of Land Management ("BLM") and other contributing public agencies for the thoroughness and clarity of the document.

In the past, Tosco has expressed a variety of concerns with respect to the alignment of utility corridors on federal lands adjacent to the Uintah and Ouray Indian Reservation (note Tosco's comments to the draft Uintah Basin Synfuels Development Environmental Impact Statement). We have stated our belief that in determining the future alignment of utility corridors it is unwise for the BLM or the Department of the Interior to make any assumptions about the Ute Tribe's future land use planning objectives or policies ... particularly with respect to the existence and location of "utility corridors" within the reservation. We believe that the BLM should take appropriate steps to ensure that all federal oil shale and other mineral reserves within the Book Cliffs Resource Area are provided with adequate access across land within the BLM's jurisdiction. We have

BLM Letter Response



Comment Letter 11

Mr. Curtis Tucker  
August 29, 1984  
Page 2.

specifically proposed the creation of a utility corridor immediately south, southeast and east of the southeastern corner of the Ute Reservation to ensure that existing and future oil shale projects in the west central and southwestern portions of the resource area will be able to locate access roads, powerlines, pipelines and other similar facilities around the reservation on land subject to BLM jurisdiction.

In response, the BLM has promised either to amend existing management framework plans to establish such a corridor when Tosco evidences its intent to proceed with its project or to include such a corridor in future resource management plans.

We are pleased to note that the proposed corridor has been included in three of the four resource management plan alternatives, including the BLM's preferred alternative (note the location of corridor 5 on Figure 2-11, corridor 12 on Figure 2-19, and corridor 10 on Figure 2-26.). For reasons we do not fully understand, however, the proposed alignment has not been included in the current management alternative as indicated by Figure 2-5 in the draft statement. We believe that even the current management alternative should reflect the BLM's previous commitment to amend existing management framework plans to ensure access to Tosco's project from the northeast across non-Indian lands. More specifically, we suggest Figure 2-5 be revised to include a corridor around the southeastern corner of the Ute Reservation linking the western end of Corridor 4 with the northern end of Corridor 9 for the reasons previously stated. The proposed revision will ensure that adequate corridors have been provided under all land management alternatives for the potential development of existing projects in the resource area without any reliance upon unwarranted or unrealistic assumptions about future land use policies on surface areas within the reservation.

Thank you for your cooperation.

Very truly yours,

W. Dixon Shay  
Director, Government Relations

WDS/jal

11.1

BLM Letter Response

11.1

A specific right-of-way proposal by Tosco, Inc., has been approved within the segment indicated. Approval of the right-of-way does not, however, result in the designation of a right-of-way corridor under the existing Management Framework Plan (MFP). Corridors are designated through the planning process, by either a plan amendment or a new plan. The Resource Management Plan will replace the MFP and designate a corridor along this segment when the plan is approved. Amending the MFP when the RMP is nearly completed would not be cost effective.





## Wildlife Management Institute

Suite 725, 1101 14th Street, N.W., Washington, D.C. 20005 • 202/371-1808

DANIEL A. POOLE  
President  
R. J. JAHN  
Vice-President  
L. L. WILLIAMSON  
Secretary  
WILLIAM M. DIXON, Jr.  
Board Chairman

August 28, 1984

Mr. Curtis Tucker  
Book Cliffs Resource Management Plan  
Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Mr. Tucker:

The Wildlife Management Institute is pleased to comment on DRAFT ENVIRONMENTAL IMPACT STATEMENT ON THE BOOK CLIFFS RESOURCE MANAGEMENT PLAN, Utah.

The Plan needs much more information to be acceptable for wildlife. No details are provided telling where the developments will be made, who will benefit, or how much they will cost. Overall impacts are not shown in a master chart.

There is no schedule for assigning monitoring responsibility, timing or costs. The Utah Division of Wildlife should have a large part in monitoring wildlife effects.

There is no definition of "stable use". We are at a loss to know if this is the population level desired by the Utah Division of Wildlife or is a BLM term.

The term "Authorized Grazing Use" (page xv) is confusing as is the frequent reference to active preference (listed as 102,915 AUM) to compute livestock reductions. Based on active preference the reductions look very large, but realistically the computation base should be the average 3 year use. Reductions then would show the true number of AUM's to be lost. The 3 year average use is 66,980 AUM's. Moderate reductions are shown by this base, only a reduction of 13,607 AUM's for the resource protection alternative and only 93 AUM for the balanced use alternative.

DEDICATED TO WILDLIFE SINCE 1971

12.1

12.2

12.3

12.4

12.5

## BLM Letter Response

12.1

Additional details pertaining to wildlife habitat developments will be addressed in the activity planning phase of the BLM's wildlife program. Habitat management plans (HMPs) will be prepared to cover the entire BCGRA and will detail developments as to location, cost, and the benefiting species.

Overall impacts to wildlife are addressed in Appendix 15, Section C (P. A15-19) by alternative. Additional information is available in the technical report referenced as Hamilton 1984, "Impacts to wildlife/wildhorses by alternative".

12.2

Monitoring costs, responsibility, and timing will be addressed in the HMP process (see Response No. 12-1). Coordination and cooperation with the Utah Division of Wildlife Resources (UDWR) is an ongoing process that will continue into the future. The UDWR plays a major role in providing wildlife population data relative to the habitat management process undertaken by BLM.

12.3

The term "stable use" is defined on p. 215 of the DEIS under the terminology of "prior stable population numbers". The term and its definition is jointly derived from UDWR and BLM data and projections. The prior stable numbers presented in the RMP are desired population levels as determined by UDWR.

12.4

The term "authorized grazing use" on page xv in the DEIS has been changed in the FEIS to "active grazing preference". The term "active grazing preference" has been further defined in the glossary of the FEIS.

12.5

Information to show the proposed livestock increases and decreases to both the active grazing preference and the average use based upon three representative years has been shown throughout the DEIS. Changes from average use show changes from what is happening now. The changes from active preference show the changes that would effect how a livestock operator could function. Active grazing preference was established as the base for livestock grazing at the time of adjudication (mid 1960's). This base was established through range inventories and studies. These studies determined the amount of AUM's that are allocated to an area of public lands for both livestock and wildlife and are based on the type and amount of vegetative resources.



## Comment Letter 12

Mr. Curtis Tucker

-2-

August 28, 1984

12.6

This plan has one of the highest livestock subsidies we have yet seen. We computed the costs for the developments listed on page 24 by using midrange unit costs given on page 75.

We find the resource protection alternative will cost \$348,000 and increase the AUM's by only 1,700 (page 24) at an average cost of \$205 per AUM. The balanced use (preferred) alternative will cost \$1,090,175 and increase AUM's by only 2,000. The cost will be \$545 per AUM.

No locations are given for these developments. However, based on BLM policy, we assume that most or all will be on the 245 allotments classed as Improvement or "I" giving an average allotment subsidy of \$13,920 in the resource protection allotment and \$43,619 in the balanced use alternative. We question whether these large subsidies to a few operators are justified when most of the good to be accomplished could be done with reductions in numbers of livestock at no cost to the taxpayer. These subsidies far exceed the interest rate and will never be recovered from grazing fees.

We prefer the resource protection alternative, but even this one should be carefully examined to reduce costs of range improvements.

Some specific comments follow:

12.7

P. 83 Reductions in wealth; these statements are based on the number of AUM's in active preference and relate to the increase of capital value of ranch property for each federal AUM. This ranch value is not recognized by the federal government.

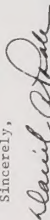
12.8

P. 83 How can big game hunting and recreational income be the highest in the balanced use alternative rather than in the resource protection alternative? Please explain how less AUM's allocated to wildlife result in more hunting.

The balanced use alternative does not tell us what will be done or where - only that more of every resource will be produced, even though monitoring and agreement with the permittees have a five year period before anything is accomplished.

These remarks have been coordinated with William E. Morse, the Institute's western representative.

Sincerely,



Daniel A. Poole  
President

DAP:msm

## BLM Letter Response

12.6

The location of livestock projects by allotment is located in Appendix 5.

All livestock projects would be developed with a multiple use concept (See Appendix 8). These projects would provide both tangible and intangible benefits for other resources in addition to livestock. Wildlife and wild horses would benefit from increased water and forage. Ecological condition and plant vigor would improve through improved livestock, wildlife, and wild horse distribution.

Fifty percent of the livestock grazing fees come back to the grazing district for the development of livestock projects through the range improvement fund. Over the ten-year project period, this would amount to approximately \$374,000 for the Resource Protection Alternative and approximately \$463,200 for the Balanced Use Alternative. An additional \$93,500 (Resource Protection Alternative) or \$117,000 (Balanced Use Alternative) would be available through Advisory Board monies derived through livestock grazing fees. It is also a common practice for the livestock permittee to support 50 percent of the cost of livestock projects within their allotments.

12.7

Please refer to Appendix 12, page 3, fourth paragraph which explains our use of "capitalized value for grazing preferences".

12.8

An error was found in the revenue generated from the increase in big game hunting and recreational income for the Resource Protection and Balanced Use Alternatives. It has been corrected in the FEIS. The local revenues would increase by \$304,200 for the Resource Protection and \$337,750 for the Balanced Use Alternative. Balanced Use Alternative revenues would be higher because the population increase resulting from BLM projects would be 11,000 more people than for the Resource Protection Alternative.

Using the corrected figures, there would be more hunter days under the Resource Protection Alternative (4060 days, as compared to 3,350 days under the Balanced Use Alternative).





UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

AUG 28 1984

Mr. Curtis Tucker  
Book Cliffs Resource Management  
Plan Team Leader  
U.S. Department of the Interior  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Mr. Tucker:

In response to the letter from Roland G. Robison, BLM Utah State Director, we have reviewed the Draft Book Cliffs Resource Management Plan/Environmental Impact Statement (EIS) prepared by the Vernal District, Bureau of Land Management, May 1984. Our review was directed to whether the action described in the draft EIS involved matters within our jurisdiction by law or special expertise or had any potential impact on NRC licensed facilities. No potential effects were identified; therefore, we have no specific comments on the draft EIS.

Thank you for the opportunity to review the draft document.

Sincerely,

Richard H. Vollmer, Director  
Division of Engineering  
Office of Nuclear Reactor Regulation

Thank you your comment.



Comment Letter 14

September 3, 1984

Bureau of Land Management  
Blue Mountain Allotment  
Attention: Carl Wright

Dear Mr. Wright:

In reviewing the Draft Environmental Impact Statement for the Book Cliff Resource Management Area, it appears that under the Balanced Use Alternative (preferred alternative), the temporary nonrenewable A.U.M.'s would be reduced on the Blue Mountain Allotment. The proposed reduction would be from 449 A.U.M.'s under the Current Management Alternative to 325 A.U.M.'s under the proposed monitoring level, a reduction of 124 A.U.M.'s. At this time it would be very detrimental to our cattle operation. We feel the allotment has not been overgrazed and with some type of sagebrush treatment the allotment will continue to handle the amount of cattle which we are running at the present time.

We would like to meet with you people before a final decision has been made.

Sincerely,

*E. Vaughn Wilkins*  
*Ervin L. Wilkins*

14.1

BLM Letter Response 14

Thank you for your comment.

14.1

See Response 1.1.

Under the Proposed Plan, sagebrush treatment has been recommended for the Blue Mountain allotment. The Temporary Non-renewable (TNR) AUMs you previously received were based on the Blue Mountain Allotment Management Plan and the sagebrush treatments that were completed in the early 1960s. BLM studies indicate that these treatments need to be redone and that the available AUMs have decreased.

The Proposed Plan allows for monitoring to be accomplished on the Blue Mountain Allotment at average use (449 AUMs). Any adjustments to this level would be accomplished following monitoring.





United States Department of the Interior

BUREAU OF MINES

P. O. BOX 33046  
BUILDING 20, DENVER FEDERAL CENTER  
DENVER, COLORADO 80235  
Intermountain Field Operations Center

September 6, 1984

Memorandum

To: Mr. Curtis Tucker, Book Cliffs Resource Management Plan Team  
Leader, Bureau of Land Management, 170 South 500 East, Vernal,  
Utah 84078

From: Acting Chief, Intermountain Field Operations Center

Subject: Draft Environmental Impact Statement on the Book Cliffs Resource  
Management Plan

Personnel of the Intermountain Field Operations Center, Bureau of Mines, have  
reviewed the subject report, as you requested.

Four alternatives for managing the resources on 1.1 million acres of public  
land in northeastern Utah are described and analyzed. Our comments concern  
management of the Federal mineral resources in the resource area, which are  
related mainly to the planning issue of mineral development.

Descriptions of the substantial mineral fuel resources (except coal) and  
salable minerals (pp. 87-97) of the resource area are good, but we suggest  
that the section about locatable minerals (pp. 97-99) be amended to discuss  
areas favorable for uranium that were noted in the National Uranium Resource  
Evaluation (NURE) study. The NURE study of the Vernal 1° by 2° quadrangle  
determined that two areas in the Book Cliffs Resource Area are favorable for  
uranium (U.S. Dept. Energy Open-file Report PCJ/F-026(32)); one is a belt  
underlain by the Mesaverde Group in the north part of the area, and the other  
is underlain by the Uinta Formation along the Green River near Ouray.

Although parts of the Book Cliffs (Sego) and Vernal coalfields extend into the  
resource area, coal resources are not mentioned in the report. Apparently,  
the coal is inferior to that being mined in adjacent fields and is of little  
commercial interest at present. Nevertheless, we believe that, for complete-  
ness, management of this resource should be discussed briefly.

15.1

15.2

BLM Letter Response

15.1

Locatable minerals, such as gold, uranium, and copper were not de-  
scribed in any detail because no expressions of interest was received  
for them, no mining districts exist in the area, and only minor local  
interest is shown in these minerals. Locatable minerals are adminis-  
tered under the 1872 mining law, as amended, and the 43 CFR 3800  
regulations. No withdrawals have been proposed within the RMP which  
would eliminate the potential development of locatable minerals.

15.2

No expressions of interest have been received in the BCRA for coal  
and no past coal development of any economic significance has oc-  
curred in the BCRA.

In addition, the known coal deposits are considered to be very mar-  
ginal in quality where exposed at the surface, or be too deeply bur-  
ied to be of any commercial interest in the foreseeable future. For  
these reasons, coal was not addressed in the RMP. If deposits having  
potential for economical coal mining exist, the information should be  
submitted to the Vernal District Office so it can be considered in a  
subsequent planning effort.



BLM Letter Response 15

15.3 The text and figures have been corrected to reflect your concerns.

Comment Letter 15

15.3

We believe that most of the impacts and consequences of each alternative on mineral resources are described adequately in chapters 2 and 4. The figures showing resource distribution and availability are especially helpful. One significant discrepancy, however, should be corrected. The Naval Oil Shale Reserve (NOSR II) and reclamation and power site withdrawals are said to be closed to oil and gas leasing (p. 24), but these areas (53,000 acres) are shown available for leasing on figs. 2-1, 2-8, 2-15, and 2-23. If these areas are indeed closed to leasing, they should be shown as "No lease areas" (category 4) on the figures, and the acreage should be included in "no lease" totals in tables 2-1 and 4-7. (Incidentally, the Hill Creek Special Tar Sand Area within the NOSR II is shown as a "No lease area.") We note that these areas are moderately (F2) or highly (F3) favorable for oil and gas (fig. 3-1) and a small part lies within a Known Geologic Structure (fig. 3-2). We believe it is necessary to correct this discrepancy so that the status of these lands is described correctly throughout the statement and the "no leasing" acreage data include the full amount of land in this category.

*Jim Jinks*  
Jimmie B. Jinks





United States Department of the Interior

GEOLOGICAL SURVEY  
RESTON, VA. 22092

In Reply Refer To:  
MGS-Mail Stop 423

SEP 4 1984

Memorandum

To: Book Cliffs Resource Management Plan Team Leader,  
Bureau of Land Management, Vernal, Utah

From: Assistant Director for Engineering Geology

Subject: Review of draft environmental statement for Book Cliffs  
Resource Management Plan, Utah

We have reviewed the draft statement as requested in a letter from the State Director.

The statement does not address effects of oil-shale development on aquifers, except in considering the potential for ground-water pollution by seepage or accidental discharge from surface operations (e.g., p. 200). Impacts from disruption of aquifers, comingling of poor-quality ground water from one aquifer with better-quality water in another and loss of artesian pressure are not addressed. Because the scope of the selected plan is to include decisions as to number and location of areas for mineral development, the statement should discuss these kinds of impacts and possible mitigation.

*JR Devine*  
for James F. Devine

16.1

16.1

The comingling and disruptions of waters from the Douglas Creek Aquifer and the Birds Nest Zone has received little attention to date within various environmental analysis (Bechtel 1981, USDI 1982c, Lindskov and Kimball, 1983, Holmes and Kimball, 1983).

Lack of interest is due to a number of reasons which can be summarized:

The Birds Nest Zone and the Douglas Creek Aquifers are not only separated by an oil shale zone but by several hundred feet of lower grade oil shales and marlstones. This entire zone acts as an impermeable layer.

The Birds Nest Zone is very limited in extent and only covers a portion of the acreage delineated as priority management areas.

The water quality within both aquifers is considered fair to poor. The water is not considered suitable for municipal and agricultural needs and may only be suitable for some industrial needs.

This condition is in contrast to the situation in the Piceance Basin where comingling of aquifers has been addressed as a significant issue.



Comment Letter 17



The Wilderness Society  
1720 Race Street  
Denver, CO 80209



Sierra Club  
736 S. McClureland St.  
Salt Lake City, UT 84102

8 September 1984

Mr. Curtis Tucker  
Book Cliffs Resource Management Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Mr. Tucker,

The Sierra Club and The Wilderness Society continue our involvement in the management of public lands in Utah. Enclosed are comments on the Book Cliffs Resource Management Plan. Please consider these in making a final decision.

We request to be retained on your mailing list for all issues related to public lands and to receive notice of any environmental analysis or planning amendment concerning the areas that are commented on in our comments. We further request written notification of any planning decision.

Thank you for your help.

*James Catlin*

James Catlin  
Conservation Chairman  
Utah Chapter of the Sierra Club

*Mike Scott*

Mike Scott  
Southwest Region  
The Wilderness Society

BLM Letter Response



## Comment Letter

Book Cliffs Resource Area  
Planning Issues

Throughout the wilderness review and other resource management programs the Sierra Club has raised issues which need consideration. Several of those issues raised pertain to the wilderness review of this area.

Unfortunately, we can not find where we were given notice of the scoping process for this EIS. If one was sent to the Sierra Club or Wilderness Society, we unfortunately did not receive it. Could the BLM please check to see if we were sent notice. We wish to be kept informed on all planning steps throughout the Vernal District. Please send us notice of any planning preparation, revision, or amendment.

A large amount of work has gone into preparing this plan. The maps are helpful in seeing the proposed actions. They are an enormous improvement over the Grand RMP maps. The comparison of alternatives table is simple and offers a good summary of the difference between the proposed actions in each alternative.

In an improvement over previous RMPs, there are tables in the grazing budgets that show a net tabulation of the economics of grazing. Unfortunately there is not a tabulation of the BLM budget (revenue and expenditure) for implementing the preferred alternative. We request that the final EIS produce such an accounting.

The following issues need to be considered in this plan.

1. Many of the major land use decisions for public lands are made in separate fragmented actions without the comprehensive environmental analysis required in the planning process. Outside this plan the BLM is making decisions on wilderness recommendations. Also outside the plan are decisions to construct a large dam on BLM land, and develop tarsands and oil shale projects. The plan makes no analysis of the cumulative impacts of all the projects this plan would allow. While national and regional guidance is needed, the major policies on land use need to be made in the RMP and not restrained by fragmented auxiliary administrative policies.

While mention is made of most of these within the plan, the actual land use decisions are occurring in other documents. Leasing for oil and gas has no plan which considers leasing need or economic return to the public. Tarsands and oil shale leasing is covered in a regional EIS.

These major actions need to be considered in the plan. Separate decision documents fail to adequately address conflicts.

- 1 -

17.1

17.2

## BLM Letter Response

**17.1** Funding for management of the Book Cliffs Resource Area is appropriated on an annual basis. Projecting the budget with any degree of accuracy is not feasible. Many of the specific costs of RMP implementation will be developed during the activity planning for management of individual resources following the final decision on the RMP. Cost/Benefit Analysis will be done for all proposed actions.

**17.2** The projects mentioned were addressed under separate EIS's and the decisions were made as amendments to the existing Management Framework Plans. This document does discuss the cumulative impacts that would result from the alternatives. Refer to pages 137, 139, 176, 192, and 207 of the DEIS.

Demand for oil and gas is a function of national markets and is also outside the scope of this document. Exact figures for economic returns to the public in the BCRA are not readily available; however, Vernal District expenditures for oil and gas administration in fiscal year 1983 were approximately one-half million dollars. The district returned in excess of 23 million dollars to the National Treasury during this same period.



Sierra Club and Wilderness Society Comments  
Book Cliffs Resource Management Plan

- 17.3 The plan follows the current administration policy of not designating areas of critical environmental concern. The BLM has provided no record that they have given ACEC inventory and designation priority in the planning process. In fact areas containing important national and regional values were not considered at all. Clearly, the BLM directly violates this mandate of FLPMA.
- 4 The BLM is not receiving fair market value for the commercial services and goods the BLM is supplying to the public in grazing and minerals management programs. The plan lacks any report on financial costs or payments on BLM programs and offers no difference in budget and revenue between the alternatives.
- 5 On a map, where has vegetation manipulation from chemicals, fire, or machines occurred? Again on a map, which areas have had review of mineral withdrawal status since the passage of FLPMA?
- 7 What areas are now leased?
- 8 What areas are now claimed for locatable minerals? What mining plans are in effect and what special development stipulations are in place?
- 9 The BLM needs to consider wilderness recommendations for lands in the study policy. This applies to Winter Ridge, UT-080-730, the only remaining WSA in the Vernal District.
- 10 Conservation groups have successfully contested the BLM wilderness inventory. We have identified additional areas of high wilderness qualities that are suitable for wilderness study. In those areas we have documented the specific regulations the BLM violated in dropping these areas. Those include: UT-080-402, -414, -419, -605, -612, -713, -721. We request that the BLM consider wilderness designation of these areas.

- 17.3 Areas of critical environmental concern were evaluated by BLM. Those areas listed on page 13 of the Draft Environmental Statement contain values that were determined to meet the relevance criteria. A summary of the inventory data and the reason they did not qualify as being regionally or nationally significant are explained in the memorandum filed at the Vernal District Office, "Areas of Critical Environmental Concern", Evans, 1983. A copy of this memorandum has been forwarded to you.
- 4 See Response 17.1. Fair market value is received by BLM for commercial goods and services in which BLM has discretion to charge such fees. Grazing fees are established by Congress and reviewed annually for adjustment in response to shifts in grazing fee rates on similar private or State-owned grazing lands, livestock market conditions, etc. In the minerals program, the Mining Law of 1872 establishes the rights of individuals to locate minerals on public lands and provides no discretion to BLM to collect fees for mineral location. Fees collected for mineral leasing (oil and gas, oil shale, etc.) are established by their respective enabling statutes.
- 5 An overlay indicating the location of previous vegetation manipulation from chemicals, fire, or machines is on file at the Vernal District Office. Impacts from these treatments were assessed under previous environmental documents and were not considered in this document.
- 6 The NORSR II withdrawal has undergone withdrawal review. It will remain in effect for a minimum of ten years (1994). Refer to Figure 1-4 in the DEIS for the location of this area.
- 7 The leasing of federal lands is a dynamic process. Any 'current' lease map would generally be out of date by the time it was published. Areas under lease can be determined by studying the land status plans in the BLM State Office public room.
- 8 Mining claim recordation is a dynamic process similar to leasing. Refer to 17.7. Location of mining claims are shown on microfiche and can be viewed during working hours at the BLM State Office or the Vernal District Office.
- Locatable mineral activity is minimal. Currently, there are no mining plans in effect within the BCRA.
- 9 Winter Ridge, UT-080-730, has been designated a wilderness study area and its wilderness potential is presently being evaluated. The wilderness suitability recommendation for this unit will be published in a statewide Draft Environmental Impact Statement to be completed by June 1995. Refer to page 13 of the DEIS, Wilderness/ACEC Designation Alternative.
- 10 Wilderness inventory units UT-080-605 and -512 are located outside the Book Cliffs Resource Area. Units -402, -713, and -721 were formally dropped either during the initial or intensive inventory phase and the decision was announced in the Federal Register. Our files indicate that during the public comment period, no unit specific remarks were filed by the Sierra Club nor an appeal filed within the 30 days after public notification of the decision for these units. The Vernal District considers these units to be released from the wilderness review system and has no authority to reinstate them.



- 17.11 BLM failed to inventory BLM lands within the Naval Oil Shale Reserve for wilderness designation. This violates Section 603 of FLPMA which requires wilderness review of all public lands. The BLM has not provided any document giving the BLM legal authority to avoid wilderness review. We request that this area be reviewed for potential wilderness designation. The area is almost completely natural, contains the outstanding Green River, and has many outstanding wilderness activities.
- 17.12 These roadless area just identified need the kind of management that would protect their diverse natural character. We request that the BLM analyze an

- 2 -

**Sierra Club and Wilderness Society Comments**  
Book Cliffs Resource Management Plan

- alternative that would protect the wilderness values in these roadless lands.
- 17.13 Commercial operators on public lands are making profits from public land resources at a cost less than that offered by non-public lands. Leases and permits are being granted, and management projects conducted to subsidize permit and lease holders. The BLM needs to report the profits made from other federal lands, and nonpublic lands in the EIS.
- 17.14 The BLM is not directly monitoring the production of resources on public lands. Oil and gas production information is monitored by the permittee, not the agency. The BLM needs to report what monitoring is now occurring and how this problem will be resolved.
- 17.15 Very little objective data or documentation is presented on the forage condition of the range and current animal use. Decisions on grazing management may be made without adequate objective analysis of long-term range condition. The BLM needs to report the number of sample sites, the history of sampling, the sampling techniques, and present data that support trend conclusions.

On December 30, 1982, the Secretary of the Interior issued a Federal Register Notice, Vol. 47, No. 251, to delete Devils Canyon, UT-080-418, from the status of wilderness study. This area was not considered for wilderness under Section 207 of FLPMA because it was not subject to strong public support for such identification. The BLM lacks authority to reinstate this unit pending the outcome of Sierra Club, et al. v. Watt, et al. NR 1214 proposes annexation of this area by Dinosaur National Monument.

Approximately 11,690 acres in Bull Canyon, UT-080-419 (00-010-001), was recommended as suitable for wilderness designation. The recommendation was published in the Wilderness Draft Environmental Impact Statement, White River Resource Area, Bureau of Land Management, Mesker, Colorado, 1982.

A statewide Wilderness EIS is currently being prepared which is the proper forum to consider wilderness issues. Refer to page 13 of the DEIS for a brief discussion of the relationship between this RMP/EIS effort and the Wilderness EIS.

- 17.11 It is true that the Naval Oil Shale Reserve No. II was not included in the wilderness inventory because there are no BLM (public) lands within the Reserve. These lands are reserved for the U.S. Navy by Executive Order. It is clearly stated in a Cooperative Agreement between the Secretary of the Navy and the Secretary of the Department of the Interior that the Navy has jurisdiction and control over the lands comprising the unit. The BLM is delegated authority to manage surface resources as long as their management does not conflict with the purpose of the Reserve. The BLM thus has no authority to inventory or study wilderness in the NOSR II.

Recently, the administration of NOSR II has been transferred to the Department of Energy. A new agreement is now being formulated. In the new agreement, no significant changes in BLM's management role is expected.

- 17.12 BLM's Interim Management Policy applies only to those lands being inventoried or studied for wilderness designation. The units mentioned in Response 17.10 do not qualify except for unit number -414, which is under protest in the case of Sierra Club, et al. v. Watt, et al., and continues to be managed under the Interim Management Policy.

See Response 17.4.

- 17.13 Oil and gas production information is monitored by the Inspection and Enforcement Program of the BLM and the Royalty Audit Program of the Minerals Management Service.

The details of the inspection and enforcement program would require several volumes of information. This information is available for public review at the Vernal District Office.

- 17.15 There are approximately 200 established trend study plots located within 30 allotments. Over a thousand site write-ups have been collected for ecological condition. Analysis of the trend and condition data are shown in Appendices II and IV. The history and technique of sampling and related supporting studies are available for review at the Vernal District Office. As explained on page 74 of the DEIS, final decisions regarding allocation of forage are not made at the time of the EIS. Any adjustments to livestock stocking levels will be made following the monitoring process.



## Comment Letter 17

15. Gradual changes in animal and plant populations are not known and are not properly assessed at the present time. The "Balanced Use Alternative" does not assess the animal and plant population changes that would occur if all the allowed actions were to occur. The impacts of management actions on these populations need to be predicted.

16. We recommend acquiring the lands along the White River either through exchange or purchase.

17. It is well known that an excessive number of mineral leases have been issued on federal lands. The effect has been to render impractical the multiple use of resources. Excessive leasing has made mineral exploitation the dominant, single use on most BLM lands.

18. The BLM needs to develop a consistent method of controlling ORV use. The proposed deletions are better than other RMPs seen, but do not offer adequate protection for wildlands, erosive soils, and important biologic communities.

19. Mineral entries threaten important archaeological sites, endangered and threatened species habitat, springs and important water courses, significant recreation areas, important scenic visual resources, etc. The majority of mining claims do not meet

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### Sierra Club and Wilderness Society Comments Book Cliffs Resource Management Plan

the necessary requirements to be deemed valid. Mining plans are not currently evaluated giving weight to resource production.

20. The permitted grazing use in many cases exceeds the carrying capacity of the land. This plan will continue this destructive practice.

21. Stipulations commonly found on mineral exploration permits and special use permits allow often conflicting activities with few requirements for reclamation. The application of stipulations fails to adequately cover protection of critical resources.

22. The Secretary of the Interior decided not to consider areas less than 5,000 acres for wilderness consideration. BLM districts in other areas have reinstated those areas into the wilderness review. The Vernal has not done this on Daniels Canyon. No explanation has been made on what the BLM has recommended. With no explanation, the BLM dropped this area while not dropping other areas which are less than 5,000 acres. This area needs to be reconsidered in the wilderness review.

23. The BLM needs to consider in the plan the comments submitted by the Sierra Club and Wilderness Society during the wilderness study phase. These comments are at the Vernal District Office.

## CHAP. 5 — PUBLIC REVIEW AND COMMENTS

## BLM Letter Response

17.16 The Balanced Use Alternative assesses the animal population changes that would occur if all the allowable actions were to take place. See page 198, and Appendix 13, Section C of the DEIS. The impacts are predicted and reflected in the numbers of animals by species.

17 Acquisition of lands along the White River is considered under the Resource Protection Alternative. Refer to Figure 1-14.

18 Protection of fragile resources were considered in the formulation of the ORV plan for the Book Cliffs Resource Area. The most extensive protection was afforded for the Resource Protection and Balanced Use Alternatives; the least protection was provided by the Commodity Production Alternative. Important biologic communities such as elk, deer, and antelope and riparian habitat along the Green and White Rivers; critical and, in many cases, severe erosion areas were identified for protection.

Roadless areas, such as the VSA's, would be afforded protection from the creation of new roads by the Interim Management Policy.

19 Refer to page 72 of the DEIS (Locatable Minerals), which discusses BLM's mineral management program in relation to other resources.

20 See Response 1.1.

21 See Response 17.10. Comments submitted by the Sierra Club and the Wilderness Society were used in the reevaluation of the wilderness study report for Minter Ridge, UT-080-730, and are now being used in the statewide wilderness EIS.



17.22 The BLM may have allowed federal funds to be used for the personal benefit of grazing operators and members of the Grazing Advisory Council. We request that the BLM report the vested interests advisory council members, their relatives, or business associates may have with public land management.

.23 25. What is the regional supply for products and services that are now supplied by public lands? On public lands, other federal lands, local government lands, and private lands, what resources are available?

26. What alternate resources both on and off public lands can be used for the same end use? Many of these resources have readily available sources, such as fire wood. Conservation of energy including recycling of materials needs to be considered for meeting future needs and for reducing the demand for fossil fuels and wood fuels.

- 4 -

17.22 Members of the District Grazing Advisory Board receive no compensation but the District Advisory Council can receive per diem and travel expenses, should they choose to file for them.

.23 This comment requests information that is outside the scope of this document and the administrative authority of the BLM. This document only discusses resources on the public lands and the impacts to regional resources and populations which would result from BLM actions in the 8CRA.

Productive woodland acreage is being designated in the Book Cliffs Resource Area to be managed on a sustained yield management program. Assuring a future supply of a renewable resource such as firewood, should help conserve fossil fuels.



Comment Letter 17

Planning Criteria and Management Stipulations  
Sierra Club and Wilderness Society Comments  
Book Cliffs Resource Management Plan

The selection of an alternative is guided by the Planning criteria established with goals. The DEIS (Draft Environmental Impact Statement) has one half page of criteria (page 14). Page 14 correctly explains that criteria are "identified and applied to all of the alternatives and provide general guidance in formulating the plan."

- 17.24 As with the issue identification stage, we are interested in being involved in developing the planning criteria. Your public participation plan shows that the criteria are available for public review. Unfortunately, the information offered in the DEIS shows that public opportunity for review of the planning criteria was not provided. This appears to be inconsistent with the public participation mandated in the planning process.
- The criteria included in the DEIS fail to address all the issues that the plan should be considering. As a result, the alternatives developed also will not be guided in resolving these issues. The failure to provide criteria that resolve these issues is a critical weakness in this plan.

The few criteria shown demonstrate the points the plan emphasizes in reaching the preferred alternative. It is interesting to note those criteria which are absent from this brief. It is the absent criteria that show the problems in the plan. In some of the criteria, inadequate attention is given to reporting all the key legal requirements the plan must meet. There are no planning criteria that guide ORV use designation, management of locatable minerals, or grazing. None of the criteria require "fair market return" on the use of public land's resources. The criteria do not give priority to the inventory and identification of areas of critical environmental concern, a FLPMA mandate.

In issuing leases the criteria do not require fair market return in leasing fees. Such a criterion should be included which selects how many acres are available for lease. The criteria also do not require diligent development proof requirements in order to approve of lease conversion. In deference to FLPMA, the BLM plans to proliferate right of way corridors rather than consolidating them as much as possible.

The preferred alternative allows uses which conflict with the goal or objective in this case. For example, the preferred alternative allows the all ORV use in critical soil erosion areas and within critical wildlife habitats. ORV use will increase erosion in these areas and impact wildlife populations.

- 5 -

BLM Letter Response

17.24 Please refer to Appendix 1 for a synopsis of the public participation process. Planning criteria are discussed on page A1-2. This document addresses all of the significant issues that were raised by the public.

.25 The text of the FEIS has been amended to include the criteria used to develop the proposed ORV alternatives. Refer to page 72 of the DEIS for a discussion of locatable minerals criteria. Existing laws, regulations, and BLM policy served as criteria for both locatable minerals and livestock grazing.

.26 See Response 17.4.

.27 See Response 17.3.

.28 See Response 17.4.

Diligence is addressed in the Combined Hydrocarbon Lease Act and the 43 CFR 3140 regulations. Additional regulations clarifying diligence are expected in the near future.

.29 The Balanced Use or Proposed Plan limits ORV use in all areas designated as crucial wildlife habitat and most areas determined to contain critical soil erosion. ORV figures have been amended in the FEIS to include a label that indicates which resource values are to be protected.



Comment Letter 17

Sierra Club & Wilderness Society Comments  
Book Cliffs Resource Management Plan

This is not an uncommon occurrence. As the resource areas are discussed, many of the preferred alternative decisions conflict with the published criteria. The criterion that is most consistently misapplied is that for resource protection. This criterion is applied as sparingly as possible.

The Sierra Club and Wilderness Society requests that the planning criteria and resource protection stipulations be considered:

17.30

1. Critical Watershed:
  - \* Develop sedimentation monitoring to quantitatively measure the effect of management on water quality.
  - \* Designate areas significantly contributing to sedimentation as areas of critical environmental concern.
  - \* Establish sedimentation threshold levels and a planning period water quality level which will be monitored.
  - \* Begin soil sedimentation and salinity erosion trend analysis giving five year changes in soil degradation.
  - \* In these critical watershed areas, mineral exploration and development activities have stipulations which limit public ORV use to maintained roads, allow no road construction in major washes or on slopes steeper than 5%, and require closure and reclamation of exploration and development facilities including roads.

- \* Mineral exploration access be excluded from sensitive surface water courses.

2. Livestock Grazing

17.31

- \* Eliminate overgrazing (over utilization) of public lands. Reduce grazing in areas where the range trend is down or the range condition fair or poor.
- \* Base range use on the worst rain fall (and thus forage production) over the average five years. This would lead to consistent range improvement.
- \* Identify indicator animal and plant species which are sensitive to grazing. These species should not be limited to major game species or plants found favored by domestic stock.
- \* Develop threshold levels measuring the quantity and quality of indicator species for each grazing area.
- \* Give priority in range budget use to develop adequate forage data. From this data, develop range condition trends on forage, water quality and quantity, wildlife diversity

BLM Letter Response

17.30

These concerns are addressed as part of the Management Guidance Comment on All Alternatives. Page 73 of the DEIS discusses activity planning which would incorporate the type of stipulations that you suggest for ORV, soil, and water management.

17.31

The livestock grazing planning criteria mentioned were used in the development of the alternatives with the following exceptions:

Forage allocation was not based on the average of five worst years. Forage allocation would be based on monitoring during normal years of forage production. Livestock numbers would be reduced during below normal years through use supervision and ongoing monitoring.

Priority would be given to range monitoring. These data would be used to determine range condition and trends and would assist in the monitoring of other resources.

Livestock would only be removed from endangered plant habitat when it is shown that livestock grazing is destroying the plant or it's habitat. Several of the plant species listed as threatened or sensitive are unpalatable or even toxic to livestock.

Riparian habitat, breeding grounds, nesting areas, and crucial wildlife habitat would be protected through management practices or reductions.

Range improvements would have a benefit cost ratio developed. This ratio would include benefits derived from other resources that may not show monies put into federal revenues.



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- and populations, ORV use, etc. (Range trends are not now adequately supported by an objective history of range condition.)
- Objectively monitor actual grazing use of public lands by wild and domestic animals. (Currently, the BLM has not reported on any field inventories of actual domestic grazing use.) Actual use may not follow the permitted period or permitted number.
  - Remove grazing use from fragile riparian zones, from endangered plant species habitat, and during important periods from critical winter range for game and nongame wildlife.
  - Reduce grazing use in allotments where wildlife population levels and riparian habitat impacts reach a threshold level or when the forage trend is downward. Remove or reduce grazing from breeding grounds, nesting areas, and critical wildlife habitat. In the case of antelope and elk, this means removing grazing from their critical feeding grounds and breeding habitat.
  - Limit range improvements (vegetation changes and water development) to areas where the costs clearly are less than benefits as measured in federal revenues from grazing and federal expenses on the improvements. Also limit range improvements to areas where no quantifiable increase in sedimentation will occur, where wildlife range and populations are not affected, and resource protection goals are first met. Range improvements funded by public money should be given a priority lower than protection for watershed, wildlife, wilderness, riparian habitat, and areas of critical environmental concern.
  - Reduce grazing from areas where significant erosion is occurring.
  - Report on the findings of the Boulevard Ridge Watershed Study which has been going on for ten years. The BLM carefully avoided mention of the results of this study in the plan. If the information is valid and applies to other areas, the study results should be used in other vegetation manipulation program decision.
3. Wildlife Habitat
- Designate habitats of threatened and endangered (T&E) species and species being considered to be added to the T&E list as areas of critical environmental concern, ACEC.

17.32

The Boulevard Ridge Watershed Report, dated August 1984, was not available at the printing of the DEIS. This study is currently available at the Vernal District Office. The study data analyzed thus far, are inconclusive in determining the effects of chaining.

Potential habitat for the only confirmed threatened and endangered species occurring in the BCRA, the bald eagle, has been identified along the Green and White Rivers. No actions have been proposed in this preferred alternative which would have a significant adverse impact on eagle habitat. Site specific protection of these habitat

17.33

Wildlife Habitat

- Designate habitats of threatened and endangered (T&E) species and species being considered to be added to the T&E list as areas of critical environmental concern, ACEC.

17.33



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- Reduce wildlife conflicts with water resources through allowed grazing level and period, fencing, and offering alternate water supplies.
- Establish target wildlife populations which represent the populations that the resource area would normally support under natural conditions. Plan wildlife conflict reductions to meet these targets.

- Validate the alleged wildlife benefits from range plan community destruction due to chemical applications, burning, chaining, and other forms of vegetation manipulation.

#### 4. Off-road Vehicle Use and Management

The planning criteria need to more clearly separate recreation vehicle use (sight seeing, hunting, etc.) from permitted use (grazing, mining, oil & gas, etc.). Permitted vehicle use is managed under the specific language of the permit. Permittees often confuse public use restrictions which do not actually affect permitted use.

We request the following ORV use designation criteria be used:

**\*Closed\*\*** Closed designations be made in areas where significant impacts from vehicle use has or will occur, in designated wilderness areas, designated primitive or natural areas, relic biological communities, endangered and threatened species habitat, archaeological sites, areas where ORV use would impact important nonmotorized recreation, areas which have no existing vehicle ways which would be impacted by ORV use, riparian habitat and water resources, areas where the BLM lacks the budget to manage ORV use, and wildlife habitat during critical seasons.

**\*\*Limited\*\*** Limited designations should occur on lands under wilderness study, areas of critical environmental concern, land important for domestic and wildlife range. The limited designation be applied to lands where sustained use of the existing vehicle ways will not cause impacts to the adjacent lands, the travelled way, livestock & wildlife populations, and other nonmotorized uses. Specific ways open for use to ORVs within areas designated as limited should be marked in the field and maps produced which are available to the public. Within limited areas, the ways designed for use should be only those needed for recreation use, which don't prevent conflicts to other resources (for example, ORV use increases archaeological site destruction), and can be managed for resource protection under the BLM budget.

17.34

## BLM Letter Response

17.33 (Cont.)

areas would occur under the Bureau's activity planning system, Wildlife Habitat Management Plans (HMPs).

Wildlife conflicts with livestock, with regard to water resources, have been reduced in recent years as a result of construction of additional and alternate water sources throughout the BCRA. Partial and complete fencing of wildlife waters has previously taken place on sources of high importance to wildlife. This procedure will continue to be expanded, where necessary, under the RMP and subsequent HMPs.

The Resource Protection Alternative considers supporting wildlife populations which are identified by the Utah Division of Wildlife Resources as being prior stable numbers. Habitat improvements and reductions of competing resource uses are incorporated within the alternative. The other alternatives place differing emphasis upon wildlife based upon the alternative objectives.

Wildlife benefits (in terms of additional forage, or ADAs, and cover) from vegetation manipulations are discussed in the RMP document (Appendix 15, Section C and Forage discussions for all alternatives in Chapter 4).

Criteria were developed to make ORV designations. First, the resources to be protected for each alternative were listed. Second, it was determined how each resource was to be categorized--either open, limited, or closed.

Resources to be protected for each alternative are listed below:

#### Resource Protection Alternative

Study and Natural Areas  
Sage Grouse Leaks  
Severe and Limited Critical Watershed/Soil Erosion Areas  
Recreation Sites  
Important and Accessible Cultural Sites  
All Crucial Wildlife Habitat  
Scenic Corridors  
Wild Horse Ranges  
Consistency With Adjoining Land Owner Land Use Plan

#### Commodity Production Alternative

Study Areas  
Sage Grouse Leaks  
Severe and Some Critical Watershed/Soil Erosion Areas  
Recreation Sites  
Important and Accessible Cultural Sites

17.34



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••Open•• Open designations should be allowed on lands which have proven to be able to sustain general area off-road vehicle use under the worst case use estimates. Analysis of general area ORV use impacts needs to include comprehensive analysis of the impacts on all natural resources and other land uses and be based on objective data taken from the area under analysis. The analysis needs to consider threshold levels for scenic qualities, soil condition, forage production, wildlife & livestock population, and conflicting uses. Areas identified for open ORV use should be able to be intensively managed to monitor and control the ORV use. A minimum of areas should be designated open to meet the limited demand for general area ORV recreation. If all other requirements are met, open area designations should be limited to those which the BLM can support the intensive management in their budget.

17.35

5. Cultural Resources  
The BLM offers no specific inventory or management policy for archaeological site protection. While oil & gas stipulations prohibit access roads from crossing a site until it is inventoried, no protection is given from the impacts of permittees and ORV users. The Chapter requests the following planning criteria be used:

- Conduct a comprehensive 5% inventory of archaeological sites in the RA.
- Designate areas having important sites as areas of critical environmental concern. Manage these designated areas to restrict vehicles away from sites, to intensively inventory archaeological resources, and to prevent theft, destruction, or degradation of these cultural values.

17.36

6. Lands Actions  
Planning Criteria  
Lands available for acquisition:  
•nonpublic lands which are critical for the management and protection of natural values on adjacent public lands  
•nonpublic lands within designated wilderness areas  
•lands that would improve the management of public lands.  
Lands available for sale or exchange.  
Each of the following criteria needs to be met:

17.34 (Cont.)

Balanced Use Alternative (Preferred Alternative)

Study and Natural Areas  
Sage Grouse Leaks  
Severe and Most Critical Watershed/Soil Erosion Areas  
Recreation Sites  
Important and Accessible Cultural Sites  
All Crucial Wildlife Habitat  
Scenic Corridors  
Wild Horse Ranges

The following criteria were used to determine whether an area would be designated as open, limited, or closed:

1. The impact of ORV use on the resource value.
2. Public input and demand for ORV use.
3. Consideration for public safety.
4. "Designation Criteria" as described in CFR 8342.1.
5. Present and expected ORV use in an area.

Generally, the least restrictive designation to resolve a resource conflict was employed.

They have been included in the text of the FEIS.

Application of a blanket criteria to determine open, limited, or closed areas, as suggested, was not considered because it would not allow for resolution of local problems and could unnecessarily restrict ORV use where resource conflicts do not exist.

In the FEIS (Proposed Action), additional crucial wildlife habitat for deer and elk has been delineated and placed in the limited category. See Figures 3-11 and 3-12.

See Response 6.1.

Lands that would improve management of public domain and nonpublic lands which could be critical for the management and protection of natural values, were used as criteria to identify lands for potential acquisition.

Lands for potential disposal or exchange were delineated using the criteria mentioned. The preferred method of disposing of these lands would be through exchange. Fair market value of any lands sold would be required.



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- \* Lands which do not possess present or future valuable natural, scenic, historic, economic purpose.
- \* Lands which because of location or characteristics are difficult and uneconomic to manage as part of the public lands and are not suitable for management by another Federal agency.
- \* Lands whose disposal serves a documented important public objective in the local government land management plan which can not be achieved by any other alternative. The public objective must outweigh all the benefits that could be realized in retaining those lands.
- \* Lands which have qualified for disposal must first be considered for exchange of other nonpublic lands which meet the acquisition criteria.
- \* Lands made available for sale which have met the above criteria be sold for fair market price.

### 7. Utility Corridors

17.37

- Criteria
- Utility facilities be limited to designated corridors.
- \* Designation of a utility corridor or right-of-way only occur through a plan amendment or revision with public involvement.
- \* To minimize environmental impacts and reduce the number of rights-of-way, common rights-of-way should be required to the extent practical.
- \* Each right-of-way or permit of access shall require removal of facilities and reclamation after the permit purpose has ended. The permittee should be responsible for the control of ORVs to prevent ORV use in sensitive areas.
- \* In areas of important environmental concern, existing utility use should be discontinued when an opportunity arises due to end of useful life or when an upgrade is proposed that can be met on other corridors. The old use should then be removed from the ROW and the area reclaimed at the utilities' expense.

### 8. Minerals:

Coal, oil, gas, geothermal and other leasable resources should follow the following planning criteria:

- \* Not issue leases on lands possessing important natural values or where the cumulative impacts of exploration and development would lead to significant damage.

17.38

## BLM Letter Response

17.37

The purpose of the delineated corridors is to provide common areas for one or more future rights-of-way. This designation should help minimize environmental impacts by reducing the proliferation of unplanned rights-of-way.

Site specific environmental analysis, including reclamation, are administered at the time of right-of-way application.

17.38

See Responses 17.1 and 17.4, Figures 2-8 and 2-23, and Appendix 4 of the FEIS. Appendix 4 explains the BLM's oil and gas category system. BLM already has an oil and gas category system in place which seems to be working well. It is being updated and modified to include new resource data to include possible tar sand development. It is similar to the one you propose.



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- \* Taking all sources of mineral resources including conservation and alternate sources, limit offering leases to the number needed to meet the basic mineral demand.
- \* Limit leasing to only those lands which can adequately be proven to have diligent exploration and development within the lease period.
- \* Extend only leases which are diligently producing a commercially competitive mineral commodity.
- \* Require fair market competitive pricing on all leases.
- \* Require exploration to occur within two years of lease issuance.
- \* Revoke leases sold for more than the lease fee.
- \* Not more than 10% of the RA should be available for lease above the amount of land expected to be diligently explored and developed in the lease period.

The planning criteria fail to aid in the decision on which areas should receive which stipulations. We suggest that the following criteria be used:

**Category 1** minimal resource protection  
Areas where this category applies include those areas where the ORV designations for open area apply. Limit the use of these stipulations to areas where current intense oil or gas production has occurred and no significant impacts are found.

**Category 2** watershed and wildlife habitat protection  
This category needs to be divided into subcategories:  
**Category 2A** Watershed Protection  
Apply this criterion to critical watersheds and riparian habitat areas  
**Category 2B** Cultural Resource Protection  
Apply this criterion to areas containing archaeological sites.  
**Category 2C** Protection of ACEC  
Apply this to areas designated areas of critical environmental concern  
**Category 2D** Wildlife and Livestock Protection  
This category applies to areas which have important game, nongame wildlife or livestock resources.



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Category 2E Recreation and scenic resources protection. Areas which contain important recreation and scenic resources (class II or III WRM) should have these stipulations on any lease.

Each of these subcategories will contain common protection stipulations which apply to areas sensitive to soil erosion, slopes greater than 5% where road construction will be made, grazing lands.

Category 3 No Surface Activity  
Surface protection needs to be required on lands within important natural areas to protect their resources. Certain ACECs may need this stipulation.

Category 4 No Leases Issued  
Lands that are designated wilderness areas, under wilderness study, major archaeological sites, endangered and threatened species habitat, major recreation areas should not be open for lease.

Locatable Minerals

Controlling locatable mineral exploration and development offers several management options. A majority of the present mining claims fail to meet the minimum requirements necessary for remaining valid. In managing mineral development, the BLM needs to systematically evaluate the performance of assessment work and establish the presence of a valuable mineral. Claims which fail to meet the necessary criteria need to be contested for validity.

Lands should be withdrawn from mineral entry in areas where the value of natural resources and the benefits from other uses outweigh potential mineral production benefits.

The Wilderness Society and the Sierra Club request that mining plans be systematically evaluated and protection requirements implemented using the following stipulations:

Class 1 Operation in existing production areas

In areas where historic major mining has occurred mining plans need to include removal of surface structures, elimination of human hazards, disposal of tailings, replacement of top soil, control of erosion, water quality protection, and revegetation with natural vegetation in a manner which will allow natural plant succession. This category applies to areas where major mining activities have occurred in the past.

17.39

Refer to the discussion of Locatable Minerals on page 72 of the DELS which discusses your concerns.

To assure the prevention of undue and unnecessary degradation, mineral entry is administered under existing regulation (43 CFR 3809) in accordance with the Mining Law of 1872 as amended, and by the Federal Land Policy and Management Act (FLPMA) of 1976.

Mining claims are evaluated when some resource conflict arises such as occupancy trespass for purposes other than mining, unnecessary or undue degradation, or disruption or damage of a legislatively protected resource, or potential impact to a wilderness study area (43 CFR 3802 and Interim Management Policy and Guidelines for Lands Under Wilderness Review). There is currently a general absence of mining claims in the BCR which would require a validity exam.

17.40

The suggested classification system for mining claims is an excellent concept and the information will be retained for future reference when a mining plan is submitted.



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**Class 2** New mineral activities in existing natural areas  
Mining plans need to perform Class 1 requirements and avoid impacting surface water supplies, road construction on steep slopes, opening new areas to ORV use. New roads need to be reclaimed and closed to ORV access within a stated period. This category applies to areas where mining activity has not regularly occurred.

**Class 3** Mining in ACEC  
In areas of critical environmental concern mining plans need to include the requirements in Classes 1 and 2. In addition to these, mining plans need to limit mining activities in duration, period, and degree that would lead to an important natural value found in the ACEC receiving a measurable negative impact. Vehicle access would be limited to the mining operation and access routes closed and reclaimed after diligent operation ceases.

**Class 4** Closed to mining, withdrawn from mineral entry  
Areas withdrawn from mineral entry are those which are designated as wilderness areas, wild and scenic rivers, relict communities, and outstanding natural areas. Also withdrawn are areas where management of mining activities can not be allowed without significant impacts or conflicts with other multiple resources.

9. Wilderness

The Chapter has sent extensive comments on each of the wilderness study areas in the resource area. None of the decision criteria and issues raised in those comments is specifically addressed in the draft RMP. We request that those comments be responded to in the final EIS for this plan.

The plan fails to consider Daniels Canyon WSA dropped and not reinstated as other areas have been. The plan also needs to consider wilderness designation for areas where wilderness inventory violations occurred leading to the area not receiving wilderness study. UT-080-402, -419, -605, -713, -730 are areas where inventory violations occurred. The Sierra Club's testimony before Congress gives the specific regulations that were violated in these areas. The Sierra Club and the Wilderness Society request that the BLM review the intensive inventory areas dropped from wilderness study and identify those areas where deletions were made for the same reasons the BLM ruled invalid. Those areas should also be reinventoried.

17.41

17.41 See Responses 17.9 and 17.10.



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Those areas which possess wilderness characteristics need to be given priority in protecting their natural resources. Management of ORVs should be limited to existing routes, mineral development be limited to activities which occurred prior to 1976, and range manipulation not be allowed in these areas.

10. Areas of Critical Environmental Concern

The BLM needs to give priority to the identification designation and protection of areas of critical environmental concern. The section on "affected environment" lists several critical environmental concerns which have regional and national concern. These include elk, antelope, bear, and deer habitat; river recreation areas (the Green River and the White River); scenic areas, endangered species habitat, sensitive soil erosion areas, and wild and scenic river candidate areas.

The plan lists areas where these special values are found. The plan does not describe the application of ACEC criteria nor show any record of a comprehensive inventory.

In one case, the BLM does describe why it did not consider ACEC designation. That case is described on page 13. The habitat for the endangered Colorado squawfish in the Green and White Rivers was found by the BLM to meet the relevant criteria. Yet the BLM found that other management decisions were given priority over ACEC. The BLM found that building the White River Dam should be given priority over the designation of an ACEC. This mispriority directly violates the literal intent of FLPMA.

The BLM then went on to say that, "BLM does not have the authority to play a major role in the management and protection of these fish species, and therefore, ACEC designation would not afford greater protection." The BLM then cites a 1983 letter in the BLM file. We request a copy of this letter called "Evans, Dean 1983 "Areas of Critical Environmental Concern--The Book Cliffs Resource Management Area."

The BLM's disclaimer of management authority is not true. BLM does have the ability to manage land uses that affect the habitat of these species. This error must be corrected in the final EIS and the area designated an area of critical environmental concern.

The BLM did apply the ACEC criteria to three other areas. There is no record of how they were applied or the inventory of the areas' values. This needs to be included in the EIS. The BLM concluded that the values "were determined to be relevant but were not considered to be of more than local importance." The

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1742 See Response 17.3.

17.43 See Response 17.2.

17.44 This request has been honored.

17.45 Refer to page 73 of the DEIS for discussion of Endangered, Threatened, and Sensitive Habitat. See Response 17.3.



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BLM offers no objective evidence to support these false conclusions. The wildlife habitat cited is of regional and national concern. The river's scenic and recreation values are of national importance. The endangered species habitat is of national concern. The simple information presented in the DEIS supports our conclusions, not those of the BLM's ACEC disclaimer.

We request that the BLM send us copies of any direction from the state or Washington D.C. office on ACEC issues. Clearly the BLM has been given direction which does not match the ACEC agency policy or FLPMA.

17.46

11. Wild and Scenic River Recommendations

Areas which meet the necessary criteria for wild and scenic river classification should be inventoried and recommended. The plan does not consider recommendation of any areas.

17.47

BLM Letter Response

17.46 A copy of 43 CFR 1600 has been sent to you. Refer to 1610.7-2(a).

17.47 The White and Green Rivers that flow through the Book Cliffs Resource Area were inventoried and listed in the publication: The Nationwide Rivers Inventory, The National Park Service, U.S. Department of the Interior, Washington, D.C. 20240, January 1982. This report indicates that these two rivers never qualified and were never listed for study in Section 5(a) of the Wild and Scenic Rivers Act. Because of a lack of new information or circumstances, neither river will be reinventoried.



ALTERNATIVES AND THEIR ANALYSIS

Placing each of the alternatives in parallel columns is helpful in assessing the larger differences between the alternatives. The appendices offer excellent information on how protective stipulations tie to the proposed decisions. This helps link the plan with implementation. Improvements have been made in the maps provided in the DEIS. They clearly show the major actions (except cumulative air pollution) and are major improvement over the maps found in the Grand RMP.

In this section of the Wilderness Society and Sierra Club's comments, the existing alternatives will be discussed. We also request consideration of changes to these alternatives.

Air Quality

The "balanced use alternative" allows enormous the mineral development in many areas. Page 201 of the DEIS reports that this alternative would authorize actions that would violate the National Ambient Air Quality Standards: "The Class II TSP PSD increments and the 24-hour secondary NAAQS for TSP would be exceeded."

This conclusion appears to be based upon the pollutants caused by a 25,000 bpd tar sand and 80,000 bpd oil shale scenario. Several other major pollution causes appear not to have been considered. It appears that the cumulative impacts to air quality have not have been assessed.

Those additional causes include the construction and operation of the White River Dam, the construction and operation of the Bonanza power plant, mining and processing of gilsonite, oil & gas production, and secondary development associated with these other projects. Secondary particulates from expanded dirt road vehicle use and from construction may exceed that estimated.

The EIS needs to report all the factors that were assessed in determining air pollution levels. The level of activity, its contribution to air pollution, and the cumulative pollution levels should be reported. It appears that the air pollution was only assessed for a few of the individual development and not for the total pollution that could be produced.

Until this analysis is performed, the BLM can not produce an alternative that can be proven to meet air quality standards. The BLM is legally required to make a decision that meets the law in protecting air quality. Even with the limited analysis given, the BLM admits that the preferred alternative would violate the Clean Air Act.

17.48

This document addresses the significant, cumulative impacts upon air quality. Refer to page 146 of the DEIS, Air Quality Assumptions. BLM does not intend to violate the National Ambient Air Quality Standards. The impact identifies an exceedance under the preferred alternative if all proposed federal and nonfederal projects would be operating at the same time. Issuance of a federal oil shale lease would involve approval of a mining and operation plan only if an adequate increment of air quality would be available. The Utah Department of Health, Bureau of Air Quality, would be responsible for issuing the appropriate air quality permits and determining the best available control technology that would be required to meet the applicable air quality standards.



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We request that the BLM complete the required cumulative impact analysis on air quality and adopt an alternative that will meet the air quality legal requirements.

Grazing

The plan fails to report if the active preferred grazing use has been systematically monitored and actual use matches the number of permits purchased. The plan is unclear in defining "use level, AUMs." Is this the average number of permits purchased each year, or is this the actual grazing use based upon a monitoring program in the field? The EIS needs to clarify this. The plan fails to report any changes in the maximum permitted use, "preference use."

17.49

The plan indicates that the average use is approximately 1/2 of the preference use. The plan also indicates that a large number of areas have a downward forage trend or poor range condition. Over use is admitted in several areas including Blue Mountain, Stuntz Valley, and Point of Pines. In some cases "range improvements" are proposed that are alleged to increase grazing. But in many cases, overgrazing is allowed to continue even though the range condition is downward or poor.

17.50

Overgrazing is against the law. The BLM must take direct action to end this practice. The BLM must choose an alternative which ends overgrazing. The preferred alternative does not stop over grazing.

Range improvements are planned for several locations mostly involving burning vegetation. Experience in other areas has proven that allowing grazing on newly seeded chainings or burns does not lead to a significant improvement in forage production. The plan needs to establish study areas to prove the benefits of this range manipulation. If any past studies have been performed, these need to be reported. While the references listed in the back do give some titles which discuss vegetation manipulation, there are not any reports cited that assess the forage and economic benefit of range manipulation using the BLM grazing practices this plan allows.

17.51

There is no cost benefit analysis of range manipulation. This needs to be performed. Range manipulation should not be performed on sites where the net costs exceed the benefits as measured in terms of public receipts and public expenditures.

17.52

FIPMA requires the government receive fair market value for the use of the public lands. The DEIS clearly documents that this legal requirement is not being met.

17.53

17.49 The "active grazing preference" was established from the adjudication process and has been redefined in the glossary of the FEIS. The term "average livestock use" is also defined in the glossary. The average livestock use information was based upon actual use on 11 allotments that operate under allotment management plans and licensed use for the remaining allotments. Both the licensed use and actual use have been monitored through use supervision for adherence to billing procedures. Refer to page 74 of the DEIS, Stocking Levels, for an explanation of how any changes in permitted use would be accomplished.

17.50

Refer to page 147 of the DEIS. Reducing the numbers of livestock alone does not necessarily improve the areas in poor ecological condition. Only about 1.3 percent (page 13 of the DEIS) of the BCRA is in poor ecological condition.

Appendix 14 shows that apparent trend would remain static or improve on all allotments except under the Current Management Alternative. Adjustments in livestock numbers would be made following monitoring (page 74).

17.51

The last mitigating measure listed under "Prescribed Burns" of Appendix 8 in the FEIS, has been changed to read, "Deferral of livestock grazing for periods of one to three years would be required".

Unpublished studies of burning responses of vegetation have been performed within the BCRA. They have been used to estimate the forage increase that would result from land treatments. These studies are available in the Vernal District Office.

17.52

Site specific project survey and design has not been initiated. A cost benefit analysis would be completed on individual projects when activity or project plans are developed.

17.53

See Response 17.4.



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The decision of the plan would not change the preference level of 102,915 AUMs. None of the alternatives consider changing this level. The preferred alternative would increase the allowed permits sold from the current level of 66,980 to 66,887 AUMs. The BLM needs to consider setting the preference level to the capacity of the range on the dry years and evaluate the environmental benefits and economic changes.

The wildlife "improvement" program seems to be geared for domestic stock and not wildlife. Range burning and reseeding of exotics is traditional. While some token shrubs may be planted for deer, the real purpose of the "improvement" is for cows and sheep. This plan does not resolve the conflicts of game especially those for elk. The plan incorrectly misrepresents wildlife improvement when they are actually expenditures for domestic grazing.

The DEIS fails to adequately remove grazing conflicts from sensitive eroding soils, critical game habitat, endangered or sensitive plant species, or from overgrazed lands. Unless grazing reductions are proposed, the BLM clearly will be failing to meet their mandates.

The DEIS fails to assess the total net forage loss for wildlife and domestic stock that would occur if all the energy development allowed by the plan occurs. The BLM needs to develop a worst case analysis of the impacts that could result from the decisions allowed. Failure to do so would mean that the environmental analysis is inadequate and the EIS not valid.

If the BLM wants to limit the impacts that will occur, then the energy development needs to be limited in number and period to limit impacts. The plan does not do this.

Several grazing alternatives need consideration. The first is the no domestic grazing alternative mandated by the grazing court decision. The purpose of the no grazing alternative is to calculate a comparative base to measure the losses on soil, wildlife, and other range values caused by grazing. While no grazing may not be the preferred alternative, it should be considered for the purposes of determining the net economic benefit from the public lands without grazing. The next alternative should remove grazing for the whole year from critical watersheds, from critical winter ranges, from antelope habitat, from important surface water sources, and from 1&E habitat.

BLM Letter Response

17.54 See Response 1.1. The proposed stocking levels will be based upon normal precipitation years. Stocking levels would be adjusted downward during dry years.

.55 The habitat improvement program seeks to improve existing wildlife habitat and to convert nonproductive areas to a level of productivity capable of supporting wildlife. Rangeland burning is geared to conversion of overmature, decadent browse to a variety of forbs, grasses, and young browse plants. Specific projects, locations, and amounts of desired forage and cover plants will be addressed in the habitat management plan (HMP) phase of the BLM's activity planning process.

.56 The Resource Protection Alternative includes complete protection of these resources and would decrease livestock use where conflicts exist. Refer to Table 2-1.

.57 Total forage loss, by alternative, is addressed specifically in Appendix 15, Section C of the DEIS, and is expressed in terms of AUMs. Each alternative has been approached from a worst-case analysis relative to wildlife and has been expressed by differing numbers of wildlife, by species, in Table 2-1 (pages 26-27 of the DEIS).

.58 The DEIS discusses a wide range of mineral leasing options. Refer to Table 2-1 (pages 15-18 of the DEIS).

.59 The no grazing alternative was considered but eliminated from detailed analysis. Refer to page 13 of the DEIS.

.60 See Response 17.56.



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The Wilderness Society & Sierra Club Comments  
Book Cliffs Resource Management Plan

17.61 In establishing the benefits of range manipulation, the BLM has not provided any direct studies in this area that support the benefits claimed. The Boulevard Ridge Study Area appears to be one area where the BLM is doing some of these studies. Unfortunately, no public report has been made on this study. There is no evidence that information from this study has been used to guide this EIS. In the final EIS, the BLM must report on the conclusion that the BLM has reached on this area, the evidence gathered, and its application in other areas in this resource area. If the evidence gathered is reliable, the results should be reported and used.

Areas of Critical Environmental Concern

17.62 The DEIS makes no recommendation for designating ACECs in any alternative. The BLM's sole response to the issue of ACECs is found on page 13 of the DEIS. As discussed before, the BLM has no record of a comprehensive inventory of cultural resources, threatened and endangered species, or wildlife communities to identify important environmental concerns.

17.63 The BLM has identified many important regional and national resources including the White River, Bitter Creek, the Green River, thirteen sensitive plant species (page 101), one threatened plant species, critical big game habitat for mule deer, antelope, and elk, and up to four endangered animal species. The recreation and hunting of this area are of national importance and more than local use. The BLM has not assessed actual use to see if these areas are of just local use. Outfitters who hunt in this area are from throughout the region and attest to some of the finest big game hunting in the intermountain region.

The BLM has not implemented the mandate to protect areas of critical concern. As mentioned before, this directly confronts a key mandate in FLPMA. We request an alternative be developed and assessed that include designating Areas of Critical Environmental Concern in areas containing:

- the necessary habitat to support the target antelope herd size;
- critical breeding and forage habitat to sustain the target deer and elk herds;
- Endangered animal habitats;
- relic and sensitive plant communities;
- areas where important archaeological sites are found;
- critical watershed areas including important water courses, and important surface water sources;

BLM Letter Response

17.61 See Response 17.32.

17.62 The Vernal District has extensive records of cultural resource, threatened and endangered species, and wildlife inventories. These documents and computerized data are available for public inspection during office hours. Much of these data were developed specifically for use in preparing this RMP.

17.63 Habitat for mule deer, elk, antelope, potential T & E species, etc., while locally important, have been determined to not be of regional or national importance. Therefore, those areas have not been addressed as Areas of Critical Environmental Concern (ACEC). Refer to page 13 of the DEIS and Evans (1983).



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- \* all class II and Class I visual resource management areas facing mineral exploration or development, and seeing ORV use.

The plan needs to propose an ACEC designation of the habitat necessary to maintain the present population of these species with no changes. The proposed management of the ACEC needs to guide actions that prevent any population change in these sensitive species and the ACEC plan should be included in the RMP available for public comment.

17.64

Land Sales  
Certain lands have been proposed for sale by the BLM. These lands need the following consideration placed on each area:  
\*because of location is its management difficult,  
\*is management by another federal agency possible,  
\*does the sale outweigh other public objectives and values including wilderness,  
\*is an important public objective being met which cannot be met realistically with nonpublic land?

None of the recommended lands have had each of these questions answered in the draft RMP. Each of these questions needs to be answered and if disposal is possible, exchange for needed lands pursued first. If exchange is not possible, then sale should be considered.

17.65

The BLM needs to consider acquisitions of land. We recommend acquiring the natural portions of state and private land along the White River. The lands in this area are an integral part of this river canyon.

17.66

The plan proposes to delay making decisions on lands to offer for sale (page 120). The plan states that separate environmental analysis reports on areas as yet unidentified will be prepared. This directly violates FLPMA which requires that land use planning make the decision on land transfers. The plan cannot allow this separation of land tenure from the public planning process.

17.67

Off-Road Vehicles  
The preferred alternative would designate 2/3 of the RA as open for all uses. The BLM offers no criteria supporting that decision. The preferred alternative would designate less than 1% of the RA as closed to vehicle use.

While a good beginning is made to manage ORVs, the decisions on which areas are in each category are inconsistently applied. Decisions are not made based upon protection of critical wildlife

17.64 See Response 17.36. The text in the FEIS has been revised to clarify BLM's proposed lands disposal procedure.

17.65 Acquisition of private lands has been considered under the Resource Protection Alternative. Refer to Figure 2-14.

State and private land located along the White River in T10S, R22E, S14N has been added to the list of land desirable for acquisition by BLM in the FEIS. See Figures 2-14 and 2-22 of the FEIS.

17.66 The text in the final EIS has been changed to reflect your concern.

17.67 See Response 17.34.



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habitat, stream drainages, erodable soils, or recreation conflicts. The BLM should limit ORV use in the roadless areas we have listed. None of the important elk and deer habitat are adequately protected in the preferred alternative.

The Chapter proposed a set of criteria to choose which areas are open, closed, and limited. The BLM lacks comprehensive criteria and many conflicts can be seen in areas designated open and limited. Some of the most important animal habitat is designated open.

The BLM needs to develop an alternative which uses the criteria the Chapter proposed and assess ORV impacts. The designations should not be described in acres but in miles of vehicle routes open for use.

In lands under wilderness study, the BLM is required to limit ORV use to existing routes in a manner that does not impact potential designation. The BLM has incorrectly shown Winter Ridge and part of Daniels Canyon WSA as open. These areas should be shown as limited by the agency's own interim management policy.

Leasing Minerals

We request that alternatives be analyzed that choose leasing only those areas where there is an established objective need to develop the resource. We also request that that alternatives exclude from leasing areas in which significant impacts would occur on important natural resources.

The wilderness lands we have described should not be offered for renewal of their leases in this plan. The BLM proposes to allow mineral activities which will build new roads in the RA every year. All the alternatives will allow a major increase in road mileage in the resource area. The BLM fails to mention that they then will consider these roads permanent and open for ORV use. The BLM needs to consider an alternative where no net gain in roads are added and where the net road mileage is reduced.

The BLM needs to consider a no further leasing alternative for the next planning cycle. The economic analysis needs to consider the ability to produce products from existing sources to meet the expected need. Nonpublic lands, recycling materials, and conservation need to be considered. At this time, no estimates of mineral demand are given in the DEIS

The stipulation categories for oil and gas need the following stipulations added to them:

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BLM Letter Response

17.68

The purpose of the RMP is to lay out general guidance as to what areas need protection and what goals are to be accomplished by placing restrictions on off-road travel. Activity plans, which will be written later, specifically address where, what, and how restrictions or closures will be made. During this latter stage of the planning process, specific restrictions on roads will be addressed and the miles of vehicle routes open for use will be known.

.69

The guidance supplied in the "Interim Management Policy and Guidelines for Land Under Wilderness Review" (see page 17, (3)) states, "No lands will be designated as 'closed' solely because they are under wilderness review, but if increasing impacts threaten to impair wilderness suitability, the BLM will move to control those impacts and may designate the area as 'closed' to the type of vehicles causing the problem, in order to control the impacts." No where in the policy does it state that an ORV designation must be made solely on the basis that an area is currently or potentially a wilderness study area. Presently, little, if any, ORV use is occurring or is likely to occur in the foreseen future. Also, no ORV use is occurring that is impairing wilderness suitability. Because of a lack of impact to wilderness suitability, no restrictive ORV designations were made. If, in the opinion of the District Manager, it becomes evident that impairment would occur, the problem area within the WSA would be designated through the interim process or through the emergency closure process.

.70

The area has an established record of oil and gas production and is rated fair to good for the future extraction of oil and gas, see Figures 3-1 and 3-2, and Table 3-1 of the DEIS. The alternatives were based upon the oil and gas category system (Appendix 4). See Figures 2-8 and 2-23.

.71

The Resource Protection Alternative provides protection of these resources.

.72

Those wilderness units that still have Wilderness Study Area status will continue to have a special wilderness protection stipulation attached to any future leases. All roads are periodically reviewed for function and use. Those serving no useful purpose are reclaimed.

.73

See Response 17.68.

.74

This suggestion will be given consideration during the next planning cycle. BLM policy at that time will determine if a no lease alternative will be developed.

.75

Forecasting mineral demand is highly speculative and is a function of the market place.

.76

See Response 17.38.



BLM Letter Response

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In all categories: a) The permittee shall provide a copy of all geologic and mineral deposit information obtained from exploration and development to the BLM.  
b) The permittee shall be responsible for preventing ORV use of access roads which are not on the BA transportation system map. Preventing ORV use includes the construction of barriers, posting of signs, and the placing of gates.  
c) The operator shall close and reclaim the access ways not open to ORV use upon completion of exploration or development.  
d) For production facilities, the operator shall provide calibrated flow measurement instruments which are monitored by the BLM. These instruments shall have protective features to prevent tampering.

Category 2 Limited Resource Protection

Category 2A Watershed Protection  
Add to category 2s requirements need to prevent any salinity or sedimentation increase over the established thresholds. Allow no roads in surface water supplies or construction of a road that would increase surface runoff and soil sluff into surface water.

Category 2B Cultural Resource Protection

Add to category 2 requirements to prevent additional vehicle visitation to archaeological site areas. This includes closing vehicle ways to ORV use and payment for agency monitoring of archaeological sites for damage or theft. This requires the operator fund an intensive inventory for archaeological sites in the activity area and within 100 yards of those activities.

Category 2C Protection of ACEC

Add to category 2 requirements that prevent any measurable change in the important natural value which the area was designated ACEC to manage.

Category 2D Wildlife and Livestock Protection

Add to category 2 requirements that prevent measurable forage changes, animal breeding, changes in nesting patterns, population changes, and other impacts to water and facilities.

Category 2E Recreation and Scenic Resources Protection

Add to category 2 requirements that prevent measurable loss of recreation opportunities and degrading of scenic visual resources.



**The Wilderness Society & Sierra Club Comments**  
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The BLM should not convert oil and gas leases to combined hydrocarbon leases unless the proponent can meet the requirements laid out in the conversion law. The proponent must prove that commercial development will diligently occur within the lease period. Based upon the past history of this industry, none of the development plans has been able to demonstrate a profitable development with the lease period. The BLM can not convert these leases without meeting this requirement. The EIS needs to address how leases proposed for conversion can meet this requirement.

**Mining**

Large mineral withdrawals have been retained where conflicting energy development projects would be impacted by mining claims. The BLM did not describe any withdrawals to protect natural values on public lands. Currently the BLM has just completed a massive program to revoke as many withdrawals as possible minimizing protection from mining activities. This plan does not discuss the revocation process.

We request information on the review of mineral withdrawals. We request information on the size and location of all revoked withdrawals and new withdrawals that have been designated since 1976. We also request copies of the reporting documents required in this review.

The DEIS has no criteria for the selection of areas to withdraw from mineral entry. We suggest that you adopt our recommended criteria and apply them consistently to the RA.

**Cultural Resources**

Book Cliffs RMP DEIS page 120:  
Approximately 700 archaeological and historical sites have been recorded in the BCRA. These probably represent less than one percent of the potential number.

None of the alternatives considers archaeological resource inventory, study, protection, or listing on the registry. No staff is allocated to this resource. The preferred alternative needs to make this a priority program.

Perhaps it was missed, but the impacts from massive energy development did not include the impacts to cultural resources. There is no mitigating plan to protect this high number of sites.

**Utility Corridors**

**BLM Letter Response**

17.77

See Responses 17.4 and 17.28.

Conversions to combined hydrocarbon leases are administered under 43 CFR 3140 and the Combined Hydrocarbon Lease Act. An environmental impact statement on tar sand conversion for the P8 Spring Special Tar Sand Area is being prepared in the BLM Denver Service Center.

17.78

See Response 17.6.

Currently, approximately 75 percent of the BCRA is withdrawn from mineral entry by way of a 1930 oil shale withdrawal, as amended. This withdrawal will undergo review in 1986 or 1987.

No other significant mineral withdrawals are present in the BCRA.

17.79 Due to the limited amount of current locatable mineral activity and the large amount of land already withdrawn, additional withdrawals were not proposed within the RMP.

17.80

See Response 6.1. Page 148 of the DEIS discusses possible impacts that could result to cultural resources.



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17.81

Consider also not siting rights-of-way in ACECs, critical watershed areas, wilderness study areas, VNM class II and I areas, T & E habitat areas, important wildlife habitat, and important water resource areas.

For these reasons, we recommend that the utility corridors be limited to those currently being used. Further we request that corridors through sensitive areas be limited to current activities and when opportunity arises to relocate that use, certain corridors be closed.

17.82

The large proliferation of corridors does not follow the intent of FLPMA to share and reduce proliferation of corridors. The preferred alternative is shown on figure 2-26. Corridor 4 would impact natural roadless land and the Green River critical habitat. Corridor 1 would impact many areas of critical wildlife habitat. Corridor 6 crosses an important part of the White River and should be removed from the long term list of corridors. Alternative nearby corridors 8 and 9 offer the same use and are less than four miles away. Corridor 3 parallels corridor 10 and unnecessarily duplicates that corridor. Number 3 crosses an important part of the White River Canyon.

17.83

We request that the BLM limit the number of corridors by eliminating those identified in these comments. The EIS fails to offer justification for each of these numerous new corridors and fails to offer any reason why alternative routes do not serve the required needs. The BLM needs to publically present rationale for the choices of each of these and alternate routes that could be used.

Wilderness

As described in the criteria comments, other alternatives need consideration. Under full development, consider recommending all wilderness areas which have no commercial development potential. Consider wilderness study of areas with inventory errors that the BLM remanded to the BLM. Consider wilderness study on additional areas where similar inventory errors occurred.

Further detailed comments were submitted to Congress on the inventory problems in this resource area. We request that these be considered.

17.84

17.85

**Budget**  
The analysis of revenue and expenditure is not adequate in the EIS. There is no information on revenue from minerals or grazing. The BLM also gives no information on the current budget, how it is allocated, and what budget requirements are needed for each alternative. The absence of budget information

BLM Letter Response

17.81

The DEIS affords protection of resource values as you suggest through the use of exclusion areas. Refer to the glossary for a definition of "exclusion area" and pages 14, 34, 43, and 65 of the DEIS for discussion of right-of-way corridors. Refer to Figures 2-11 and 2-26 for the locations of proposed exclusion areas.

17.82

Section 503 of FLPMA states that the utilization of rights-of-way in common (corridors) shall be used in order to minimize adverse environmental impacts and proliferation of separate rights-of-way. The delineation of corridors within this document satisfies the mandate.

17.83

The following considerations were used to delineate potential corridors:  
existing linear rights-of-way;  
corridors within the Uintah Basin Synfuels EIS;  
Western Regional Corridor Study;  
existing land use plan corridors (MFP, URA);  
terrain;  
minimizing conflicts with other resource values;  
and public comments.

These corridors were presented to the public on April 5, 1983. Refer to Appendix 1, pages A1-2 through A1-5 and Response 11.1.

17.84

See Response 17.10.

17.85

See Responses 17.1 and 17.2.



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makes it impossible to determine which alternatives are cost effective. Budget information is also needed to tell how each point in the plan will be implemented. Budget information shows how the BLM has and will implement land use plans.

The budget analysis needs to include the funding the BLM proposes for each activity in each alternative and the revenue currently received and expected to be received for use of public lands in each alternative.

Financial analysis of the expenses and revenue of the BLM as well as the local surrounding region is needed to determine if the BLM cost-benefit relationship meets public needs. We request that the BLM provide this information in the plan.

BLM Letter Response



BLM Letter Response

Comment Letter 18

Gary Sprouse Ranches 160 South Flint St. Layton, Utah 84041 (801) 544-4262

September 10, 1984

Lloyd Ferguson  
Bookcliff Resource Management Plan  
Bureau of Land Management  
170 So 500 E  
Vernal, UT 84078

Gentlemen:

We are in receipt of your Bookcliff Resource Management Plan and respectfully submit the following comments.

In reviewing your alternative management plans, it appears that the balance of proposed plans weigh heavily against the permittee grazing cattle. I particularly do not agree with the alternative plan labeled "Balanced Use", since this would call for a 35% below active preference for livestock grazing, would increase wildlife authorization for a marginal 9% and would give wild horses an authorized 2,340 AUM's which serve absolutely no beneficial purpose for anyone. I further would like to comment on each of your alternative plans in their respective order, with my views relative to each plan as it relates to livestock grazing.

"Current Management Alternative" Even though this plan does not call for a reduction in livestock grazing, I still believe it to be unfair to the permittees for the following reasons:

In 1964, the Bureau of Land Management, after completing an exhaustive study, placed several of our AUM's in a suspense category with the promise that when the range improved, after completing a number of scheduled improvements, the suspended AUM's would be placed into an active category. Since that time, the following improvements have been made and completed:

1. Pine Spring Area. An area of approximately 3,000 acres has been chained by the BLM. S & H Ranches built and completed approximately 6 watering ponds, with an additional 6 or 7 ponds completed by the BLM.
2. Saddle Horse Ridge. An area of approximately 2,000 acres has been chained, a water system completed, consisting of pipelines and float controlled troughs, placed into service at the expense of S & H Ranches.
3. Black Horse Ridge. An area of approximately 2,000 acres has been chained by the BLM and a water guzzler built. The pipeline and float controlled water system served by the water guzzler was placed in service at the expense of S & H Ranches.

18.1

18.1 See Response 1.1.

18.2

18.2 Refer to Public Hearing Response 4.

It is current BLM policy that no increases or decreases in live-stock forage will be given until the 5 year monitoring period is completed. Following these studies, proper adjustments would be made.



4. Tom Patterson Point. This area has been chained approximately 4,000 acres by the BLM. A complex water system was placed in service, consisting of a lined reservoir with 5 or 6 miles of pipeline, float controlled troughs, all placed in service at the joint expense of S & H and BLM.
5. McCook Ridge. An area of approximately 2,200 acres has been chained and S & H Ranches have built numerous watering ponds at their expense.
6. Monument Ridge. An area of approximately 3,000 acres had been chained by the BLM, and an additional 5,000 acres that had been burned and reseeded which improved the range significantly, a water trough system was placed in service by the BLM and S & H Ranches completed 2 stock watering ponds at their expense.
7. Sweetwater Canyon. A large area has been burned and reseeded.

S & H Ranches provided the funds for chaining the Utah State leased lands in each of the above listed chained areas. S & H Ranches also provided all the labor on all the fencing projects, to protect the reseeded on the chained areas and further to properly rotate the range, allowing for the appropriate rest periods.

Mr. Donald Hatch, Bob Dearman, and I recently completed a careful physical examination of all the aforementioned improvements and range conditions and believe the range is currently better than it has ever been in its entire history, with significant increased forage. I therefore believe that the carrying capacity has, by far, exceeded that necessary to place the suspended AIM's back into an active category, and by this letter request that the Bureau of Land Management take affirmative action to accomplish this.

During the trip taken by Mr. Hatch, myself and Mr. Dearman, we were able to photograph all of the range improvements and range conditions with video equipment and a 35 mm camera, which we would be happy to make available to the Bureau of Land Management or any other interest parties.

The principles of S & H Ranches have owned this property directly or indirectly over the past 30 years, and have yet to realize a profit from these livestock operations. I do not believe that it serves anyone's best interest to increase the herd of wild horses in the Bookcliff area, or to take badly needed AIM's from the livestock producers to increase the authorized use of wildlife, since I do not recall one improvement program that the Utah State Fish and Game contributed funds to complete.

"Resource Protection Alternative" This alternative, in my opinion, would be the very poorest balance of the four alternative plans, as this



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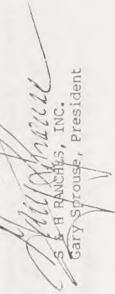
would reduce livestock grazing by 48%, would increase wildlife authorization 27%, and give 2,940 AUM's to the wild horses, which again, serves no useful purpose to anyone.

"Commodity Production Plan" The Commodity Production Plan, of course, would be the most desirable for the livestock operators, although it calls for a very marginal increase of only 6% above the current active preference, and it is interesting to note that this plan would call for a 60% decrease in wildlife authorization and only 710 increased AUM's for wild horses. Since the livestock would only increase 6%, it is difficult for me to understand why the wildlife would be decreased 60%. It appears that a much better plan could be proposed.

S & H Ranches respectfully requests that the Bureau of Land Management propose and adopt a fifth alternative plan that would keep good the promises made to the permittees back in 1984, restore the AUM's to active use that had been placed in a suspended category and work the balance of use around the new active AUM's allotted to livestock grazing. I strongly recommend that this fifth plan would leave the wild horse authorization at zero.

If, after reviewing any of the above comments, you have any questions, please advise.

Very truly yours,

  
S & H RANCHES, INC.  
Gary Sprouse, President

GS:11

cc: Curtis Tucker  
Bureau of Land Management  
170 S 500 E  
Vernal, UT 84078

Donald C. Hatch  
PO Box 1655  
Roosevelt, UT 84056

Clive Sprouse  
PO Box 559  
East Ely, NV 89315

BLM Letter Response



Comment Letter 19

Mr. Curtis Tucker  
Book Cliffs Resource Management Plan Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Mr. Tucker

I would like to take this opportunity to make a comment on the Book Cliffs E.I.S.

Most of what I have reviewed in this Grazing section, I feel that there has been a lot of preparation & research in the writing of this document.

In the alternatives this shows that there would not be any range deterioration in the current management, commodity production, or the balanced use. I feel that one of these alternatives should be used so as to protect the economy conditions of our community, state & nation.

Many times we are criticized for paying a low usage fee on the lands, yet those of us that do produce something from these lands are the only ones that do pay.

Sincerely  
*Meril G. Snow*  
Meril G. Snow

BLM Letter Response 19

Thank you for your comments. Your views will be given consideration in making the final decision on the Resource Management Plan.





September 11, 1984

Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Re: EIS-Book Cliff Area

Att: Curtis Tucker  
BookCliff Resource Management Plan Team Leader

Dear Sir:

**20.1** In reference to the Environmental Impact Statement for the Book Cliff area, we as county commissioners are very concerned about any reduction in grazing rights. It is our desire to go on record opposing any such reduction.

The area in question, and reasons given for reduction have since faded with the demise of oil shale activity in that area. Many of the reasons given seem to be fading because of the inadequacy or need of development of mineral and gas holdings. Inasmuch as the economic situation in the livestock business has been so bleak the past years, we feel that not only would this be another slap in the face but might prove the death knell for the larger livestock operations in that area.

It is our feeling that the development of said mineral areas is many years down the road and the taxing base of livestock, as the only marketable resource, will be the

Thanking you for your consideration in this matter, we are  
Respectfully,

UINTAH COUNTY COMMISSION

*Don M. Waver*  
Chairman

*Neil H. Compadre*

*Don M. Waver*

BZW/dcl

cc: Uintah Cattlemen's Association

COUNTY BUILDING 147 EAST MAIN - VERNAL, UTAH 84078

Thank you for your comment.

**20.1** See Response 1.1.



Comment Letter 21

Alan C Woodard  
73432 Apr 64  
Meden, Colo., 80641

Mr. Curtis Tucker  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah, 84079

Re: Environmental Impact Statement  
Specific: Book Cliff Resource Area and Stakeholder Agreement.

Dear Sir:

This comment is being written as a permission and trying to be open to all ideas and opinions. The statement has been prepared over an extremely large area and I feel for the most part a good job has been done, but as expected there are many different opinions as to best way to manage the Book Cliff Resource Area.

Any time we manage any area for only one particular purpose; i.e. livestock, wildlife, plant species, mineral resources, we are not allowing that area to achieve its full potential. However, when hostile attitudes are put aside and all different concern groups can work together and maximum utilization of our land resources can be achieved. It is my sincere hope that one day this balance in attitude may be common place.

I for one am glad to see this E.I.S. prepared and I'm really pleased with annual analysis of range lands. I agree that there must be a balance in use and improperly managed livestock can disrupt the tender balance in return. However, I've been proven that properly

Thank you for your comments. Your views will be given consideration in making the final decision on the Resource Management Plan.

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BLM Letter Response

managed livestock grazing can have just the opposite effect and improve range conditions. Proper management doesn't always include reduction in numbers but also such techniques as; rest rotations, Quick over frequent returns, and interseeded numbers on small areas with careful observation and often rotation. Proper management also means keeping up with technology and using new methods of management and plants, such as the new High Crest seed grass.

As a permittee I'm concerned about acquisitions of the effect that livestock grazing has on certain plant species. It must be remembered that wildlife also has an impact on range conditions, and because of acquired taste or environment often have more effect on the so called endangered plants. I'm not qualified to judge in this area but request that BLM be applied in analyzing damage and improvement in this area of concern.

Please keep us posted on all new developments. Let's all work together and figure out what's best for everyone concerned. Working together we will accomplish the goal. Fighting each other we'll destroy the balance in nature.

Sincerely yours,  
Theron C. Woodward



Comment Letter 22

AtlanticRichfieldCompany Government Relations  
555 Seventeenth Street  
Denver, Colorado 80202  
Telephone 303 575 7577  
Public Lands

September 11, 1984

Mr. Curtis Tucker  
Team Leader  
Book Cliffs Resource Area  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Re: Book Cliffs Resource Area  
Draft Environmental Impact Statement and  
Resource Management Plan

Dear Mr. Tucker:

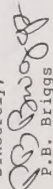
Atlantic Richfield Company appreciates the opportunity to comment on the referenced report. Through its operating divisions, Atlantic Richfield is interested in the oil and gas, oil shale and coal potential of the Book Cliffs Resource Area.

Because of our oil and gas interests, we are especially concerned with the 413,000 acres of the Resource Area which will require special lease stipulations under the Preferred Alternative. We have identified two areas on the attached map which we feel have moderate to high potential which should not be as encumbered with special stipulations as they are under this alternative. (Detailed information on these areas was sent to you in November, 1982, as part of the inventory stage of the planning process.)

In total, the Preferred Balanced Use Alternative has only 66,000 acres less under special stipulations than the Resource Protection Alternative. Please re-evaluate the need for these special stipulations in these two areas of oil and gas potential.

If you have any questions regarding our comments, please contact me at the above address or phone number.

Sincerely,

  
P.B. Briggs

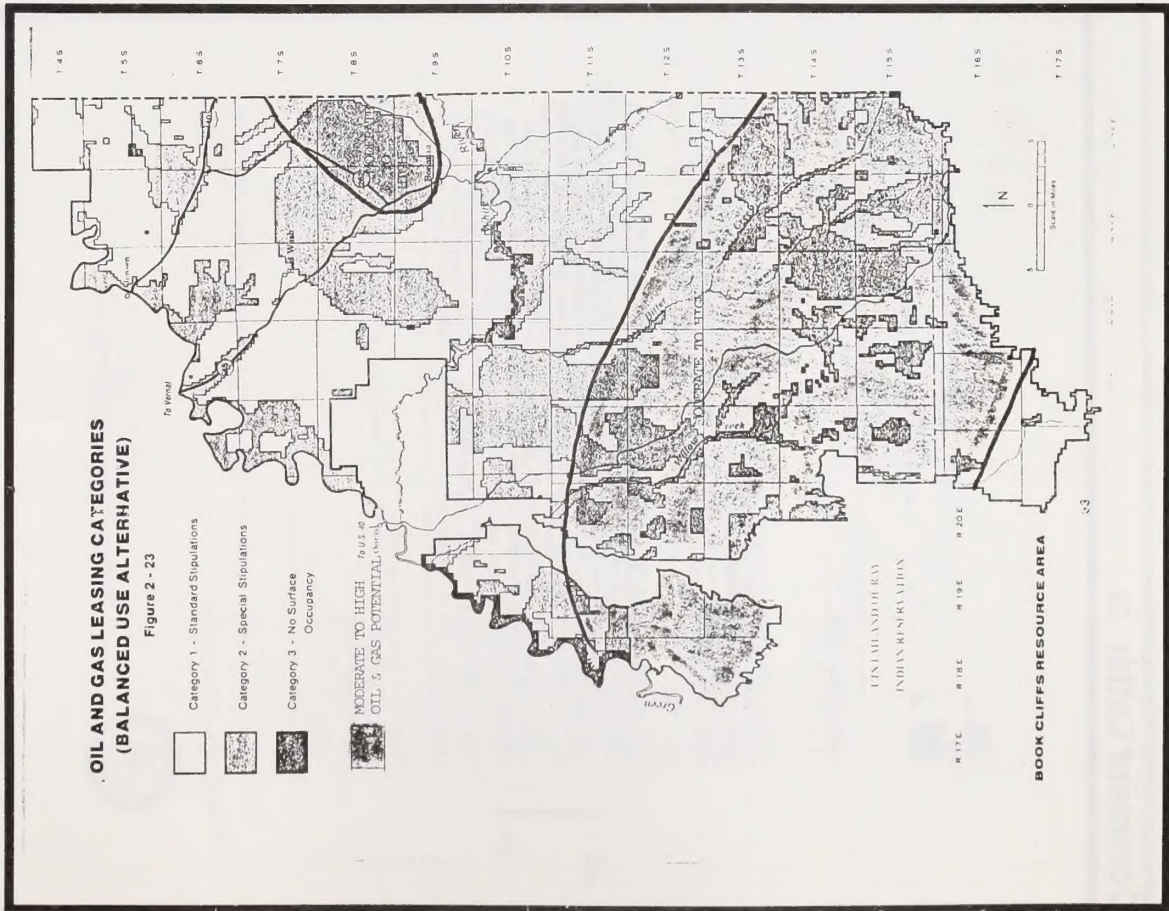
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ARCO-614

BLM Letter Response 22

Thank you for your comments. Your views will be given consideration in making the final decision on the Resource Management Plan.







Comment Letter 23



**DIVISION OF WILDLIFE RESOURCES**  
UTAH DIVISION OF WILDLIFE RESOURCES  
DOUGLAS F. DAY  
Director  
1596 West North Temple/Salt Lake City, Utah 84116/(801) 531-9333

**Reply To:**  
NORTHEASTERN REGIONAL OFFICE  
671 W. 100 N., Vernal, Utah 84078 / (801) 789-5103

September 13, 1984

Lloyd H. Ferguson  
Vernal District Manager  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Lloyd:

The Draft Environmental Impact Statement for the Book Cliffs Resource Management Plan has been reviewed and our comments formally prepared and forwarded. However, it is apparent that suitable habitat exists for the reintroduction of wild bighorn sheep and wild turkeys. We would like to call to your attention that the Draft Impact Statement is lacking in the treatment of these two species. We therefore request that the revised document include bighorn sheep and wild turkeys for consideration as potential additions to the current wildlife resource in the Book Cliffs Area. Future proposed releases would naturally go through the existing framework for approval.

Thank you for your assistance in this matter.

Sincerely,

*Donald A. Smith*

Donald A. Smith  
Regional Supervisor

DEPT. OF NATURAL RESOURCES  
Bureau of Land Management  
671 W. 100 N., Vernal, Utah 84078

WILDLIFE DIVISION  
Bureau of Wildlife Management  
1596 West North Temple, Salt Lake City, Utah 84116

BLM Letter Response 23

Thank you for your comment.

**23.1** The plan has been amended to include this new data. Refer to Chapter 1, Management Concerns in the FEIS.



Comment Letter 24



DEPARTMENT OF THE AIR FORCE  
REGIONAL CIVIL ENGINEER, WESTERN REGION (AFESC)  
630 SANSOME STREET - ROOM 1316  
SAN FRANCISCO, CALIFORNIA 94111

TO: ROV (CoX/556-6439)

SUBJECT

Resource Management Plan/Environmental Impact Statement (RMP/EIS), Book Cliffs Resource Area, UT

Mr. Curtis Tucker, Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, UT 84078

1. We appreciate the opportunity to comment on the subject RMP/EIS and we offer the following comments:

a. As you are aware, some of the Book Cliffs Resource Area has historically been subject to military overflights which should continue in the future. In the past, there have not been any problems between the Air Force and the Bureau of Land Management concerning potential conflicts between military overflights and wilderness designations. We, therefore, concur with any of the alternatives your agency designates, provided no restrictions are placed on military overflights in wilderness areas.

b. There are certain aspects of the alternatives mentioned which we would be less inclined to support because areas which are appropriate for military overflights and low altitude training routes are becoming increasingly rare. Desirable characteristics include: relatively isolated locations of sparse populations, areas presently under federal jurisdiction, diverse topography, and areas which lack heavy commercial activities such as mining.

2. Therefore, the Air Force supports the alternative (the Resource Protection Alternative) that disposes of the least amount of property, has minimum transmission lines, and does not allow an excessive amount of commercial activities. This support would be based on the condition that no restrictions are placed on military overflights. We appreciate this opportunity to comment on the RMP/EIS concerning the Book Cliffs Resource Area.

*Phillip E. Lammi*  
PHILLIP E. LAMMI, Chief  
Environmental Planning Division

24.1

BLM Letter Response

Thank you for your comment.

24.1

No restrictions of military overflights are proposed within this plan.



BLM Letter Response

Comment Letter 25



721 Second Avenue  
Salt Lake City  
Utah 84103  
12 September 1984

Mr. Curtis Tucker  
Book Cliffs Resource Management Plan Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Mr. Tucker:

The entire impact statement addresses many different scenarios and alternatives in the development of the resources of the Book Cliffs Resource Area, including recreational opportunities on the White River. The scenarios themselves present problems associated with planning-- especially in view of the history of resource development in the Uinta Basin and oil shale country.

For instance, at one time the decision was made that all the water needed by energy developers in the Book Cliffs Resource Area was to come from the White River and not from the Flaming Gorge Reservoir, the Green River, or the Central Utah Project's water on the south slope of the Uinta Mountains. It is not known how this decision was made and what the rationale was behind this decision.

The repercussions of this decision is that water resources for the region can not be planned by the resource management team. At one time it was stated that there was intent in at least 140,000 acre-feet of water for energy development. The State of Utah's proposed White River Dam and Reservoir was to supply this water and this was to be the only water supply. The State determined that the dam would be built if it could produce 40,000 acre-feet of water. Presently there is only one oil shale developer (White River Oil Shale Company) who may need 20,000 acre-feet for full commercial development (Full commercial development of oil shale has not yet occurred because of technological breakdowns at the Union Oil resort center in Colorado). The State of Utah now considers that it would build the dam for this 20,000 acre-feet use. Does the Federal permitting process allow the construction of the dam and reservoir when the need is not justified? Will a new EIS be necessary to build such a big project (in terms of environmental and recreational losses) for so little water?

An example of overbuilding in the Uinta Basin and the Book Cliffs Resource Area has already occurred with the Bonanza Power Plant of Desert Generating and Transmission Company (the same people who want to purchase the electricity from the White River Dam power plant). The EIS approved of two 400 megawatt units, the first to go on line in the near future. Presently it seems that

25.1

The assumption that "all water needed for oil shale development would come from the White River" was made on page 145 of the DEIS. This assumption was made to enable an analysis of a maximum cumulative impact upon the White River and it's environment. The actual depletion of the White River could be much less than the figures that are presented in this document.

25.2

The White River Dam was discussed in the White River Dam Project Final Environmental Impact Statement (USDI 1982c). The BLM issued a decision which authorizes the use of public lands for that purpose on July 29, 1982. No additional environmental impact statements (including this document) will be prepared.



## Comment Letter 26

-2-

less than 30% of the output of 400 megawatts can be sold. You should review my comments in the EIS on the power plant when I asked about the need for the electricity. The Federal agencies seem to rely to much on the stated "needs" of these projects by either the developers (from the free enterprise world) or by the developers (from the State of Utah).

Thus it seems that when it comes to planning one must consider the alternatives: 1) that development may not occur at a rate that justifies the White River Dam and Reservoir for water supply; 2) that the development may not be able to market its product once it is built; 3) that by the time the development occurs in an economic manner that the uses of the land may have a different value (as recreation or wildlife needs) and such uses may reflect a change in the attitudes of the public; and 4) that the Bureau of Land Management and other Federal agencies should not be too frivolous in granting permits to such enterprises. Certainly a 10 year lag and better assessment of demand and technology should be included in the EIS before any permits and rights-of-way are granted.

25.3

Perhaps to intercept any bad projects and to take the politics out of water resource planning, the Bureau of Land Management should require that the water supply for all developments at the commercial scale does not come from the White River and that the developers must build their own water supply system.

Sincerely,

*Peter Hovinch*

Peter Hovinch  
Issues Committee  
Utah Nature Study Society

## BLM Letter Response

25.3

The projections of demand for rights-of-way corridors and other resources discussed in this Draft EIS are based upon the best data projections that are available. Any future projects that are determined to be inconsistent with this plan will require additional environmental documentation and a subsequent plan amendment for approval.





**Amoco Production Company**

Denver, Colorado  
1670 Broadway  
P.O. Box 800  
Denver, Colorado 80201  
303-836-4040

Roberta Andersen  
Public Lands Coordinator

SEPTEMBER 13, 1984

Mr. CURTIS TUCKER  
TEAM LEADER  
BUREAU OF LAND MANAGEMENT  
170 SOUTH 500 EAST  
VERNAL, UT 84078

Dear Mr. TUCKER:

AMOCO PRODUCTION COMPANY, A SUBSIDIARY OF STANDARD OIL COMPANY (INDIANA), SUPPORTS THE COMMODITY PRODUCTION ALTERNATIVE IN THE DRAFT EIS FOR THE BOOK CLIFFS RESOURCE MANAGEMENT PLAN. BECAUSE OF THE PROLIFIC NATURE OF THE BCLRA IN TERMS OF EXPLORATION, DEVELOPMENT AND PRODUCTION OF OIL AND GAS, ALONG WITH THE POTENTIAL FOR FUTURE TAR SAND AND OIL SHALE DEVELOPMENT, IT SEEMS CLEAR THAT AN ENERGY MINERAL PRIORITY SHOULD BE ESTABLISHED FOR THE AREA. ALL OPTIONS FOR ENERGY DEVELOPMENT SHOULD REMAIN OPEN AND VIABLE.

IT ALSO SEEMS CLEAR, IN LIGHT OF YOUR PAST GOOD RECORD FOR DEALING WITH ENERGY PRODUCERS, THAT YOU HAVE SKILLED STAFF ABLE TO ACCOMMODATE A HIGH DEGREE OF MANAGEMENT FOR COMMODITY PRODUCTION. YOUR THOROUGH EXAMINATION OF THE BCLRA'S RESOURCE POTENTIAL, AS REFLECTED IN THE PLAN, MAKES ONE OF THE MOST COMPELLING CASES FOR RESOURCE PRODUCTION WE'VE SEEN.

THANK YOU FOR THE OPPORTUNITY TO EXAMINE THE PLAN, AND FOR CONSIDERING OUR COMMENTS.

SINCERELY,

Thank you for your comments. Your views will be given consideration in making the final decision on the Resource Management Plan.



**EXXON COMPANY USA**  
POST OFFICE BOX 120 • DENVER, COLORADO 80201

EXPLORATION DEPARTMENT  
WESTERN DIVISION  
H.W. PRACITORUS  
MANAGER

September 14, 1984

Mr. Curtis Tucker  
Book Cliffs RMP Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Mr. Tucker:

Exxon Company, U.S.A. is pleased to have the opportunity to review and comment on the Draft Resource Management Plan and Environmental Impact Statement (DRMP/EIS) for the Book Cliffs Resource Area. Exxon has a strong interest in the planning process for federal public lands because many of these areas, especially in the resource rich Uinta Basin, have potential for additional discoveries and production.

We find it encouraging that the Book Cliffs Resource Area recognizes the significance of minerals, particularly oil and gas, as a multiple use resource. As you know, the Book Cliffs Resource Area and the Uinta Basin have had long established oil and gas production, mostly from Tertiary and Cretaceous age sediments.

We have closely examined your range of alternatives for their impacts on oil and gas exploration and development activities. The Bureau's maps of oil and gas favorability, oil and gas leasing categories, and known geologic structures received particular attention. These maps, in addition to those for tar sands, oil shale, and gilsonite, all indicate a strong probability for continued exploration and production activities.

Oil and gas exploration and development activities are not incompatible with livestock management, wildlife habitat, or recreational use. In most cases, the application of standard stipulations, in combination with today's sophisticated rehabilitation techniques, is sufficient to protect surface resource and environmental values. This fact has been demonstrated repeatedly by the oil industry in all types of terrain.

A DIVISION OF EXXON CORPORATION

Thank you for your comments. Your views will be given consideration in making the final decision on the Resource Management Plan.



Comment Letter 27

Mr. Curtis Tucker

- 2 -

September 14, 1984

If the BLM's preferred alternative is implemented, Category 2 lands (oil and gas leases with special stipulations) will increase by 122% over the present amount. We think that the increase, which will result in 40% of the Book Cliffs Resource Area lands being classified as Category 2, is unrealistically high. Some of these lands should be reclassified as Category 1 (oil and gas leases with standard stipulations). We believe this particularly applies to lands within known geologic structures. We are convinced that standard stipulations are sufficient to protect surface and environmentally sensitive values in the vast majority of the Book Cliffs Resource Area.

We are pleased to concur with the BLM's preliminary recommendation of unsuitability for the Winter Ridge Wilderness Study Area. We heartily agree with your geologists' interpretation of moderate to high oil and gas potential throughout the wilderness study area. We note also that half of the Winter Ridge WSA is on a known geologic structure. It is our belief that the subsurface resource values in the Winter Ridge WSA outweigh the surface values. Therefore we reiterate our strong recommendation to exclude the Winter Ridge WSA from wilderness withdrawal.

Thank you for the opportunity to comment and your consideration of our views. We look forward to future opportunities to participate in the Bureau of Land Management planning process. Please feel free to contact Mr. Fernando Blackgoat on our staff at 303-789-7488 if, at any time you wish to discuss this area further.

Sincerely,

*H. W. Praetorius*  
H. W. Praetorius

FB:mma

c - Mr. W. R. Campbell  
Mr. R. R. Detn  
Mr. P. V. Kemp  
Mr. A. A. Plante  
Mr. H. E. Repp  
Mr. J. A. Willott  
Mr. C. L. Wilmott

BLM Letter Response





**MOUNTAIN FUEL RESOURCES, INC.**

P.O. BOX 11450 - 79 SOUTH STATE STREET, SALT LAKE CITY, UTAH 84147 PHONE (801) 530-2400

September 5, 1984

Mr. Curtis Tucker  
Book Cliffs Resource Management Plan Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Mr. Tucker:

Mountain Fuel Resources, Inc. herewith submits its comments on the Draft Environmental Impact Statement which the BLM prepared for the Book Cliffs Resource Management Area.

In general, the draft EIS is comprehensive and thorough in its coverage of the issues. As a natural gas transmission company, we concur with selection of the Balanced Use Alternative as the preferred management plan. The objectives and actions indicated in Table 2-1 would be compatible with our projected activities in northeastern Utah. The Balanced Use Alternative will enable the development of energy resources while protecting other natural resources.

The draft EIS indicates that rights-of-way would be encouraged within identified corridors. Unfortunately, this is not always feasible. Studies conducted by local, state, and federal agencies indicate that few corridor opportunities (with limited capacities) are available. Mountain Fuel Resources, therefore, recommends that additional rights-of-way be considered. If adequate mitigating measures are implemented to protect other resources, such additional rights-of-way would not create significant impacts on the Book Cliffs Resource Management Area.

Mountain Fuel Resources appreciates the opportunity to comment on the draft EIS and requests that a copy of the Final Environmental Impact Statement be provided upon completion.

Very truly yours,

*Richard W. Hyman*

*RW*  
D. C. Flaim  
Coordinator, Environmental Affairs

DCF:lb

28.1

28.1 The purpose of corridor designation is to channelize future rights-of-way into logical and environmentally acceptable areas to the maximum practical extent. The BLM recognizes some rights-of-way may be needed in areas located outside of any corridor and which cannot possibly be located within a corridor. These types of rights-of-way will continue to be processed on a case-by-case basis.

Refer to page 65 of the DEIS for a discussion of right-of-way corridors.



Comment Letter 29

BLM Letter Response



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

1860 LINCOLN STREET

DENVER, COLORADO 80295

SEP 13 1994

Ref: 8PM-EA

Mr. Curtis Tucker

Book Cliffs Resource Management Plan Team Leader

Bureau of Land Management

170 South 500 East

Vernal, Utah 84078

Re: Draft Book Cliffs Resource  
Management Plan/Environmental  
Impact Statement

Dear Mr. Tucker:

The Region VIII Office of the Environmental Protection Agency (EPA) has reviewed the referenced document. We recognize the difficulty of adequately addressing the resource conditions, management plans, and environmental impacts for such a large area. Our concerns involve primarily water and air quality, and wetland/riparian area considerations in planning the various uses of the Book Cliffs Resource Area Lands. Detailed EPA comments are enclosed.

We feel that the RMP/EIS could provide a stronger management direction to deal with several areas of concern. Some of these actions include: a more definitive correlation with applicable statutes and regulations which deal with water quality; integrating watershed activity planning with the various land uses; expanding the erosion and water quality considerations in ORV management; clarification of nonpoint source water quality impacts and controls; more definitive wetlands/riparian area protection policies; and defining the monitoring program in more detail.

Extensive site-specific project planning and impact analysis will be done under this broad RMP/EIS. We believe that there will be a continuing need for public and other agency involvement in planning some of these projects. The process and opportunity for this involvement need clarification.

Based on our concerns and the criteria EPA has established to rate the adequacy of draft environmental statements, we have rated this draft EIS as Category ER-2. This means that we have environmental reservations about the preferred alternative but additional clarification and impact assessment may alleviate our concerns. If you need further EPA assistance, please feel free to contact Doug Lofstedt of my staff (303-844-2460 or FTS 564-2460).

Sincerely yours,

*John W. Hoffbuhr*

Jack W. Hoffbuhr  
Acting Assistant Regional Administrator  
for Policy and Management

Enclosure



EPA COMMENTS ON DRAFT BOOK CLIFFS RESOURCE MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT (Utah and Colorado)

Water Quality, Soils, and Watershed

The current Utah water quality standards, including designated beneficial uses and use protection criteria, should be included as a planning base. Streams meeting or exceeding these standards should be identified. There should be clarification of how BLM's Water Quality Management Program is integrated with the State's Water Quality Management Program.

29.1

We have several concerns which relate to consistency of the RMP/EIS to the Clean Water Act of 1977, as amended. Reference is made on page A4-2 to the Clean Water Act and the Federal Land Policy and Management Act (FLPMA) as granting "authority for . . . a reduction in water . . . quality". Apparently this is in reference to energy development. The exact provisions being referred to should be stated. How are water quality implementation commitments consistent with EPA's current water quality standards regulation which does not allow the state to remove a designated use if, 1) the use is existing (unless a use requiring more stringent criteria is added), or 2) if the designated use can be attained through required technology controls or best management practices (40 CFR Part 131.10(h))?. How are the implementation commitments consistent with Section 102(a)(8) of FLPMA which requires that "water resource" values be protected? In summary, the consistency of BLM activities to applicable water quality statutes and regulations needs to be defined throughout the RMP/EIS.

29.2

We commend the BLM for addressing watershed treatment needs and alternative treatment levels. We believe that it is a basic need to implement treatment measures on both the 98,800 acres of land with critical erosion and the 12,300 acres with severe erosion as targeted in the Resource Protection Alternative (versus the reduced acreage of critical erosion lands that would be treated under the Balanced Use Alternative). The planning framework needed to achieve these goals needs clarification. The RMP should list and "prioritize" specific watershed management plans. How will management of the other land use activities (such as grazing, energy development, and ORVs) be consistent and integrated with the watershed treatment plans? There appears to be a weak linkage of managing these other activities to the planned structural work (such as the sediment detention dams) and to overall watershed treatment needs. Soil loss reductions are projected. We believe that the highest feasible reduction should be the goal (as indicated in the Resource Protection Alternative). What improvements in watershed vegetative cover and water quality will result from watershed treatment? We would also like to see any needed watershed inventories scheduled in the RMP.

29.3

Under the Resource Protection Alternative watershed treatment would not be done for areas of "low resource values and a low probability of success" (page 49). We assume this would also apply to the Balanced Use Alternative. What are the criteria for making these determinations? We would like to see the RMP clarify the inter-disciplinary team that will be needed to make these determinations.

29.5

**BLM Letter Response**

29.1

The BLM intends to be in conformance with all State Requirements. The DEIS has been reviewed by the State of Utah. See letter 32.

Willow, Bitter, and Evaporation Creeks regularly exceed Utah standards for boron, an element of concern in irrigation water. The source of the boron is believed to be evaporite deposits in the Green River and Utah formations. The boron is concentrated as the stream flow is depleted by evapotranspiration. This condition appears to be a natural occurrence and no methods of control are known, hence none are proposed in the RMP.

29.2

The BLM intends to comply with all applicable laws and regulations including those pertaining to water quality. A listing of agencies and appropriate coordination authorities for project approval is provided as Appendix 2. This listing is not totally complete; it shows major authorizing actions. The relationship between other agencies and their legal roles (EPA and Utah) is not pursued. This plan proposes actions which are believed to improve water quality i.e., watershed treatment measures, off-road vehicle designations and development of grazing systems. These actions are consistent with FLPMA.

29.3

Following approval of the Resource Management Plan, the BLM will develop activity plans, including watershed management plans. These plans will address management of specific watershed problem areas. The priorities for developing and implementing these plans will be based upon the comparative severity of the watershed problems, the likelihood of improving the conditions through treatment, and the availability of funding. Coordination of land management with other resource uses would also be included in the activity plan.

29.4

In general terms, any procedures that will reduce sediment will improve water quality. Mechanical treatments, structures, or grazing systems which would improve infiltration or increase vegetation density would be possible methods as suggested in this plan. No data are available which would enable a quantification of the anticipated improvement.

29.5

The BLM has completed soil, vegetation, and water point source inventories. Prior to initiating any watershed treatments, the BLM will conduct hydrologic analysis of the proposed treatment areas. Schedules for conducting these inventories will be developed in the activity plans.

There were two criteria which were used to develop different alternatives that you referenced. The Resource Protection Alternative included all areas of critical and severe erosion and proposed attempting some form of treatment which would be developed in activity planning. The proposed plan (Balanced Use Alternative) deleted areas which have high natural geologic erosion and/or have low annual precipitation and thus would have limited opportunities for successful treatment.



BLM Letter Response

Comment Letter 29

2

We believe that it may be appropriate to close severe erosion areas to ORV use as stated in the Resource Protection Alternative (page 49). However, the map showing ORV use designations for the Resource Protection Alternative (page 51) indicates areas closed to travel that do not include all the severe erosion areas shown on Figure 2-6 (page 41). What are the water quality, vegetation, and watershed impacts of limited and open use designations under the Resource Protection and Balanced Use Alternatives? The protection of these resource values should be included in the ORV discussion on page 84. How will ORV management be consistent with the Executive Orders on flood plains and wetlands?

29.6

The RMP/EIS states that the ORV designations under the Balanced Use Alternative would be consistent with plans of the Ute tribe (page xv). What are these plans and in what way would BLM plans be consistent?

29.7

In Utah, the EPA administers the National Pollutant Discharge Elimination System in consultation with the Utah Department of Health, for point source water discharges. This program should be described under the EPA section of Appendix 4.

29.8

Appendix 4 presents BLM and other agency guidance and/or requirements relating to nonpoint source (NPS) water quality impacts associated with energy development. However, the potential NPS concerns need to be better defined in the alternative comparison and environmental consequences chapters. Briefly defining RMP guidance for controlling potential nonpoint sources should be included. It can be misleading to say, in the case of oil shale on page 200, that if there were no wastewater treatment discharges, there would be no impact to water quality. Are the same assumptions being used for tar sands? Please refer to recent EPA reviews of the Sunnyside Combined Hydrocarbon Lease Conversion EIS and the Utah Combined Hydrocarbon Leasing Regional EIS for a much more detailed discussion of EPA concerns regarding tar sands water quality planning.

29.9

What are the salinity impacts from existing erosion and land use activities (particularly livestock grazing)? What salinity reductions can be achieved through grazing management? The RMP/EIS should target salinity reductions as part of watershed treatment in order to offset salinity increases associated with projected energy development.

29.10

Air Quality

The Utah Department of Health, Bureau of Air Quality would be responsible for issuing any needed air quality permits associated with the projected energy development projects. Several Utah State government agencies are listed on page xi, but this particular agency is excluded. Assurances should be made that they have had the opportunity to review the Draft EIS.

29.11

The interdisciplinary team that will determine the specific areas to be treated will be comprised of a hydrologist, soil scientist, range conservationist, and wildlife biologist. Other resource disciplines would review the proposed activity plan during the environmental analysis review.

29.6

See Responses 17.34 and 17.68. Severe and critical erosion areas that are accessible, or likely to receive off-road vehicle, use would be designated as closed under the Resource Protection Alternative and limited under the proposed plan. There would be little difference in the impacts to soil, water, and vegetation regardless of which one is selected. Off-road travel would not be allowed under either choice. The Resource Protection Alternative would require that all roads be designated and signed as open. The proposed plan would limit vehicle use to existing roads without road specific designations and signing of all roads. Specific problem roads or trails could be closed and signed. Specific quantification of the impacts is not possible due to a lack of data, however, some improvement over the Current Management Alternative is expected under both of these alternatives.

Page 84 in the DEIS has been amended to include the protection of water, soil, and vegetation.

An ORV monitoring program will be developed, regardless of the alternative that is selected. Where use problems are identified, modifications will be made to the activity plans and designations may be changed if deemed necessary.

The Green and White River floodplains have been protected under both alternatives and thus comply with the Executive Orders. Other floodplains are commonly covered by vegetation such as greasewood, tamarisk, or big sagebrush which effectively discourages off-road vehicle use. Problem areas would be handled on a case-by-case basis.

29.7

Refer to page 114 of the DEIS for a discussion of consistency with plans of the Ute Tribe.

29.8

See Response 29.2. The BLM consults with the State on water pollution problems.

29.9

See Response 29.1 and page 145, Water Quality Assumptions of the DEIS.

The White River Shale Project, detailed development plan (Bachtel Petroleum, Inc. 1981), indicates that no wastewater will leave the development tract. Since no evidence is available to disprove this assertion, it has been assumed to be valid. This same assumption cannot be made for tar sand development because no specific mining plans have been developed. Water impacts are thus unknown. Specific environmental analyses will be conducted on individual tar sand projects.



29.12

The RMP/EIS states that the National Ambient Air Quality Standards (NAAQS) and PSD Class II increments for total suspended particulates (TSP) would be exceeded under proposed tar sands/oil shale development (pages 82 and 201). The specific projects causing such exceedances would most likely have to control TSP emissions to avoid such exceedances or not be permitted by the State. Actual control requirements by the State need to be in the final EIS. A more fundamental issue is why the BLM is proposing in a preferred action, leasing levels that would exceed TSP standards.

Vegetation Management

We have several comments and concerns regarding the vegetation management program. We appreciate the fact that such a high percentage of the land in the resource area has vegetation in good to excellent ecological condition. We encourage continued improvement in ecological trend of the fair and poor condition vegetation. We recommend that the EIS assess the watershed/water quality protection value of both the existing vegetation conditions and the ecological conditions supported by the preferred alternative. How does this compare with the protection value of the Resource Protection Alternative? We would like to see the RMP/EIS integrate more clearly the vegetation management goals and programs with the watershed program.

29.13

We realize that land treatment may be needed in order to improve substantially forage production in some areas. Treatment such as use of chemicals and burning, is planned under the three non-current management alternatives (page 24 and elsewhere). We are concerned about both the priority and environmental impact of such treatment. It appears to us that the watershed management plans, allotment management plans/planned grazing systems, and implementation of riparian/wetland habitat protection measures are a higher priority to establish before expending funds on vegetation treatment activities. We would like to see the RMP address this issue and clarify these priorities. What are the comparative environmental impacts of this treatment?

29.14

The BLM proposes to have at least a five-year interim monitoring program before implementing changes in grazing practices (page 14). Because of this, the intent to carry out the allotment management direction under the preferred alternative (as expressed in Table 2-1, Appendix 5 and elsewhere) should be defined. Eliminating or restricting spring grazing is an important aspect of grazing management in some cases. Mr. Karl Wright of your staff has clarified that there will actually be 28 allotments in which spring grazing will be addressed through planned grazing systems versus the 15 shown on page 24 for the preferred alternative.

Wetlands and Riparian Area Management

We commend the recognition on pages 13 and 73 of Executive Orders 11908 and 11990 to protect floodplains and wetlands. However, we suggest several changes and/or revisions in order to develop this program in more detail. The specific RMP criteria used to assure that the executive orders will be achieved need clarification.

29.15

29.10

No site specific data are available for estimating the salinity impacts from grazing or other land uses. Studies that were used in development of the Grand RMP described saline soils that originated from Mancos Shale, a type which is generally absent within this resource area.

Approximately 56 percent of this resource area is classified as nonsaline soil, 33 percent slightly saline at depths in excess of 8 inches, major drainages comprise 8 percent which are moderately saline, and 2 percent is highly saline (USDL, Bureau of Reclamation, 1975).

Implementation of watershed treatments, control of off-road vehicle use and development of improved grazing systems will improve water quality through reduction of sediment and salts which would enter live water sources. The amount of salt change resulting from changes in grazing practice cannot be quantified. Salinity reduction would be given a priority in determining which areas would be treated during activity planning. Proper livestock management is probably the best method of controlling salinity.

29.11

Review of the Draft EIS by the Utah Department of Health, Bureau of Air Quality, was coordinated through the State Clearinghouse. The Department of Health has been added to the mailing list per your suggestion.

29.12

Since BLM does not have discretionary authority over the air quality standards, they have only been referred to in this document. BLM is not proposing to violate State or Federal Air Quality Standards. See Response 17.48.

29.13

There are insufficient data to show the impacts by alternative on watershed/water quality from vegetative conditions. If it is assumed there is a relationship between apparent trend and watershed/water quality, then Appendix 14 (Anticipated Trend in Ecological Condition), could be used. This appendix is summarized as follows:

Allotments by Alternative				
	Current Management	Resource Protection	Commodity Production	Balanced Use
Upward Trend	6	45	26	28
Downward Trend	7	0	0	0
Stable Trend	33	5	24	17
Stable-Upward Trend	8	4	4	9

It is anticipated that the Resource Protection Alternative would improve ecological condition in fair and poor areas more rapidly than the other alternatives even though the end result may be the same. The monitoring program would provide more complete data on ecological condition and trend.



The Resource Protection Alternative appears to be more consistent with the orders. This is reinforced by the discussion on pages 23, 24, and under each alternative, which establishes a stronger program of grazing management under this alternative in wetland/riparian areas. We suggest an evaluation of each alternative to the executive orders to assure that as much reasonable protection as possible can be given. We would like to see the existing wetlands mapped and quantified in Chapter 3. The comparative impacts to be allowed under each alternative need further definition.

29.16

Various Nationwide 404 Permit conditions are listed in Appendix 4. What activities will come under this program? Activities requiring individual 404 permits are briefly mentioned under item 17 on page A4-11. The 404 permit program, its location in the CFR, and the activities requiring a separate 404 permit should be defined in more detail. Overall, the role of the Corps of Engineers (COE) in the planning and approval of energy development activities, in particular, that would impact wetlands and perennial streams should be strengthened. In addition, the correlation of BLM planning to COE requirements for these activities should be clarified. Are they integrated?

29.17

#### Minerals Management

There are several energy development concerns (in addition to those already mentioned) that we would like to raise. It appears that the special stipulations and no surface occupancy designations for oil and gas development under the Resource Protection and Balanced Use Alternatives provide similar water quality protection. We suggest that the EIS address the difference in degree of watershed/water quality protection between these two alternatives. We support the strong approach of recognizing at this level of planning the environmental restraints to future leasing and Applications for Permits to Drill.

29.18

The discussion of oil and gas on page 60 indicates that areas mapped for each leasing category (page 63) still may be tentative. If there are any revisions planned, what would be the effect on water quality, riparian/wetland areas, or important wildlife areas?

29.19

Additional oil shale leasing could "jeopardize the continued existence of two endangered fish species, the Colorado squawfish and humpback chub, and another species that is a candidate for listing, the razorback sucker," in the White River (page 199). This is attributed to an annual depletion of 28,000 to 56,000 acre feet of the river. Would the assessment of this impact be coordinated between the U.S. Fish and Wildlife Service and BLM? What impact would this depletion have on water quality standards? Would additional leasing be consistent with the applicable water quality statutes (as already discussed)?

29.20

Under the preferred alternative, substantially fewer acres of the Special Tar Sands Areas (STSAs) would have special mitigation and no surface occupancy requirements. We believe that the RMP should be setting the necessary requirements to protect water quality, riparian/wetland, and watershed values. However, because of these wide differences in leasing category acreages, the adequacy of the planning requirements and the environmental impacts (in addition to acres disturbed) need to be defined.

29.21

## BLM Letter Response

Land treatments, water projects and management facilities are part of the development of Allotment Management Plans, grazing systems, Watershed Management Plans, and wetland/riparian habitat protection. The development of the proposed projects would be in conjunction with the development of activity plans. It is standard procedure to give priority to areas in the worst condition. Impacts from these activities are discussed in the short-term long-term sections in Chapter 4.

29.14

Under the preferred alternative, livestock numbers would be limited for the monitoring period. Following monitoring, adjustments in livestock would be made as explained on page 75 of the DEIS. Monitoring during this period would be emphasized. During the five-year monitoring period, emphasis would be placed upon range trend, utilization, actual use, and climatological studies. Implementation of these studies would be given priority over project construction. Project construction would be given priority in category allotments.

See Response 29.6.

29.15

Refer to the text revisions on waterfowl in the wildlife sections of Chapters 3 and 4 of the FEIS.

29.16

See Response 29.2. The BLM has and will coordinate review and approval of projects in conformance with the 404 permit program.

29.17

The Balanced Use and Resource Protection Alternatives provide almost identical levels of protection for watershed resources. Although the category designations for floodplains, wetlands, and public reserves shift from two to three, the special stipulations listed in Appendix 4 will provide the same level of protection (see Nos. 3, 4, and 10). The Resource Protection Alternative would provide additional protection to adjacent nonfloodplain and public water reserve areas that do not require it. The Balanced Use Alternative provides for any necessary stipulations to protect watershed resources while not restricting adjacent areas.

29.18

The shaded areas shown for category designations are for illustrative purposes. Although the areas are close to the final designated boundaries, the final 40-acre subdivisions will not be made until after an alternative is selected to be the Resource Management Plan.

29.19

The final subdivisions will then be based on resource criteria identified on pages 14, 34, 40, 49, 53, or 60 of the DEIS depending on the alternative selected. For example, if an area has a watershed consideration that requires protection, the area will be stipulated accordingly.

29.20

The BLM will coordinate with the U.S. Fish and Wildlife Service concerning Threatened and Endangered Species. Refer to page 73 of the DEIS. The impacts from cumulative water depletions are discussed on pages 159, 176, 197, and 208 of the DEIS. The proposed plan would affect water quality as described on page 200. Any future water



Comment Letter 29

29.22 The special stipulations for energy development should be briefly clarified to demonstrate the linkage of mitigation to actual resource protection needs.

Wildlife Management

29.23 The preferred alternative projects a significant effect of energy development and increased livestock production on wildlife (page 198). We question why a significant impact would be necessary. Will the wildlife habitat management plans and grazing allotment management plans be flexible enough to allow for wildlife displaced by energy development activities? We believe that consultation with the Utah Division of Wildlife as these plans are developed, would help assure that displaced wildlife is not significantly affected by crowding, stress, and competition for forage, water, and cover.

Right-of-Way Corridor Planning

29.24 The impact of right-of-way corridors on critical resources under the preferred alternative needs clarification. Table 2.3 on page 77 states that resource conflicts are possible within proposed corridors. This appears to contradict the statement on page 84 which says that development of the corridors will not be detrimental to critical resources. Can the degree of impact be projected in the RMP? What will be the basic criteria for critical resource protection (in addition to the very broad mitigation listed on page 65)? Will there be opportunities to consolidate uses in order to reduce corridor mileage?

Monitoring

We have several concerns regarding monitoring and evaluation plans. Evidently, a comprehensive monitoring plan including vegetation, soils, watershed, and water quality resources will be done after the final RMP/EIS is completed. We believe that the RMP/EIS development process because of the public and inter-agency involvement, should be used to define these plans to the extent feasible at this level of planning. The following are some monitoring concerns we would like to see addressed:

- water quality monitoring intensity needed to evaluate adequacy of best management practices for controlling nonpoint source pollutants and to demonstrate compliance with State water quality standards,
- consideration of both chemical and biological monitoring,
- water quality monitoring responsibilities of BLM, mineral development lease/holders, and other State and Federal agencies,
- funding sources,
- pre and post-development monitoring requirements,

29.25

BLM Letter Response

allocations would be approved by the State. They would determine if the projected impacts are acceptable to them prior to granting the allocation. Coordination with the appropriate Federal agencies would be completed prior to BLM issuing approval of a project. Refer to Appendix 2.

29.21

Refer to Appendix 4 (revised) for a discussion of the category system. Concerns for water quality, etc. can be addressed as special stipulations, while no surface occupancy would effectively deny recovery of tar sands. Further analysis in the RMP is not feasible without specific development proposals. The proposed plan of development by a leasee would require BLM approval and site specific mitigation would be developed at that time. Additional environmental documentation would also be completed prior to approval of the mining plan.

29.22 Refer to Appendix 4 (revised).

29.23 See Responses 12.1 and 12.2.

29.24 The text on page 84 has been revised. Specific impacts cannot be determined without specific proposals. See Response 17.37.

29.25 The purpose of a Resource Management Plan is to allocate resource uses while responding to specific land management issues that are raised by the public. The concerns expressed regarding monitoring are good suggestions and they will be addressed during the specific activity planning for each resource use. Public and interagency review opportunities are provided in that step of planning.



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6

- corrective actions that could be taken in the various situations that could arise (other than amending or revising the RMP) when problems are identified by monitoring,
- and coordination and approvals of the monitoring and remedial action plans by other relevant agencies including State water quality and wildlife agencies.





United States Department of the Interior  
NATIONAL PARK SERVICE  
ROCKY MOUNTAIN REGIONAL OFFICE  
655 Parker Street  
P.O. Box 25287  
Denver, Colorado 80225

IN REPLY REFER TO

L7619 (RNR-PC)

SEP 18 1984

Memorandum

To: Book Cliffs Resource Management Plan Team Leader, Vernal District Office, Bureau of Land Management, Vernal, Utah

From: Associate Regional Director, Planning and Resource Preservation, Rocky Mountain Region

Subject: Review of Draft Environmental Impact Statement (DEIS) on the Book Cliffs Resource Management Plan (DEC 84/30)

The National Park Service (NPS) has reviewed the subject DEIS and offers the following comments:

The current management alternative would result in up to 50 days annually of "atmospheric discoloration" in Dinosaur National Monument (p. 157). In this alternative, class II Total Suspended Particulates (TSP) increment limitations could be exceeded. The class II TSP increment limitations would be exceeded for the commodity production and balanced use alternatives. Only the resource protection alternative would assure compliance with the Prevention of Significant Deterioration (PSD) of air quality increments. Since the Clean Air Act does not authorize exceedances of the class II increments, the resource protection alternative should be the preferred alternative.

Visible discoloration may occur at Dinosaur National Monument and at Colorado National Monument under the commodity production and balanced use alternatives. Although those two alternatives would have more impact than the current management alternative on the monuments, no specific impacts are discussed. There is little discussion of either the Federal class II SO<sub>2</sub> increment or Colorado category I SO<sub>2</sub> increments. The EIS should provide more detailed information on expected pollutant concentrations, increment consumption, amount of visibility degradation and percent of time (e.g., 50 days) the air quality is expected to be degraded at the monuments, as well as the effects of reduced air quality on the biological resources of the monuments. In addition, the air pollution impacts on Arches National Park should be addressed. Subsequent EISs and PSD applications for proposed projects in the Book Cliffs Resource Management Area must provide more detailed information on air quality impacts on Dinosaur and Colorado National Monuments and Arches National Park.

On Page 13, the document states that habitat for the endangered Colorado Squawfish in the Green and White Rivers met the criteria for designation as an Area of Critical Environmental Concern. The document further states that the States of Utah and Colorado are responsible for appropriation of waters

30.1

30.2

30.3

30.1

The BLM concurs that more detailed analyses are needed. Additional air quality analysis would occur when more is known about the actual location of granted leases, where the facilities would be built on those leases, and what technology and related emission control would be proposed. Since these parameters are presently unknown, the RMP analysis is regional in nature and has used what is believed to be a realistic approach to address potentially worst case conditions. The results indicate that air quality could be of concern and further site specific analyses would be done during the NEPA and PSD processes to address specific leasing proposals.

30.2

Air quality at Arches National Park would be unaffected by any of the alternatives for this RMP. Each environmental document produced by the BLM addresses air quality impacts, where applicable, based upon the best available data.

30.3

BLM agrees with your comment. Refer to page 73 of the DEIS under the title, "Endangered, Threatened, and Sensitive Habitat", and Appendix 2, page A2-2.



BLM Letter Response

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from the rivers and that Bureau of Land Management (BLM) does not have the authority to play a major role in the management and protection of these fish species. Although BLM cannot appropriate river waters, BLM should be aware of the habitat and not lease lands in the area for development which would require appropriation of water from the rivers.

As a result of H.R. 1214, the NPS recently prepared a document titled "Resource Assessment for Daniels Canyon Wilderness Study Area." Figure D of this document (attached) depicts a boundary alternative for Dinosaur National Monument that was designed to take into consideration two key concerns. They are:

1. The scenic, scientific, cultural and recreational values that importantly supplement those within the monument boundary, and
2. The management and administration of the area for resource protection and public use.

The Daniels Canyon area and Moonshine Draw area, which are within the alternative boundary referred to in Figure D, contain important scenic and recreation values. These values include:

1. Aesthetic values which constitute the views from:
  - a. Ruple Point Overlook and access trail.
  - b. The Green River which is a popular float trip through a recommended wilderness area, and
  - c. The proposed trail through Daniels Canyon as discussed in the draft General Management/Land Protection Plan (GMP/LPP) for Dinosaur National Monument which is soon to be released for public review.
2. Opportunities to develop hiking trails between key points of development (i.e., Josie Morris Ranch and Echo Park).
3. Opportunities to interpret the historic Outlaw Trail and other cultural and natural values.

The GMP/LPP will recommend that these lands be protected through the withdrawal process and that a memorandum of agreement be prepared to insure that the opportunities and values as mentioned above are properly considered and provided for.

In view of the above, we recommend that the EIS for the Book Cliffs Resource Management Plan be revised to reflect that the following stipulations would be enforced upon the red cross-hatched area on the attached land ownership map (figure 1-2):

1. Withdraw the area under the provisions of FLPMA as being subject to the Mining Law of 1872.
2. Designate as "No surface occupancy" (refer to Figure 2-23 in the DEIS).

30.4 BLM believes that area contiguous to Dinosaur National Monument in the Daniels Canyon and Moonshine Draw vicinity would be adequately protected through implementation of the RMP. The Proposed Plan would limit ORV use in the area along the stockdrive trail above the Josie Morris Cabin and place Daniels Canyon and portions of Doc's Valley in oil and gas leasing category II, where special stipulations will be attached to protect the surface. This visual resource management class could be adjusted upward if any changes occur in one or more of the variables used to determine the visual management class, i.e. user sensitivity. Possible mineral developments could be adequately controlled under the 43 CFR 3809 regulations.

30.4



3. Designate as "Class I change not permitted" on the "Visual Resource Management Classes" map (refer to figure 3-17 in the DEIS).

4. Designate "Closed to Travel" on the "Off-Road Vehicle Designation" map (refer to figure 2-28 in the DEIS).

The NPS continues to express an interest in taking advantage of memorandums of agreement where practical to properly address resource and recreation needs as well as management and administrative concerns. As each agency continues developing its management plans we encourage and look forward to the opportunity to resolve all issues and concerns regardless of what vehicle we might utilize.

We would also like to urge that the BLM planning consider preserving the viewshed from the Colorado National Monument looking across the Grand Valley towards the Book Cliffs.

The DEIS omitted reference to three potential National Natural Landmarks located within the Book Cliffs Resource Area. All three sites are located in Uinta County, Utah. They are:

1. Blue Mountain - Cliff Ridge
2. Bonanza Gilsonite - The Cowboy Vein
3. White River Fossil Plants

Further planning for the Book Cliffs Resource Area should take into account these potential designations and avoid impacts that could adversely affect the outstanding ecological and geological features of these areas. Information on the National Natural Landmark program can be obtained from Carole Madison at the above address, telephone 234-6443.



Richard A. Strait

Enclosures

30.5

30.6

30.5 No significant impacts to the Grand Valley viewshed would occur under the Balanced Use Alternative.

30.6 The Blue Mountain - Cliff Ridge vicinity was identified as being significant and is proposed to be protected by a scenic corridor to be established between U.S. Highway 40 and Blue Mountain. Within the corridor, ORV use and oil and gas leasing would be restricted and the visual resources protected. The Bonanza Gilsonite Site (the Cowboy Vein) and the White River Fossil Plant area are located on private land.

The National Park Service is charged with the National Natural Landmark Program and they determine which areas merit study and qualify for designation (CFR 36, Part 62). If the National Park Service determines Cliff Ridge is suitable for landmark status, the Book Cliffs Resource Management Plan can be amended.







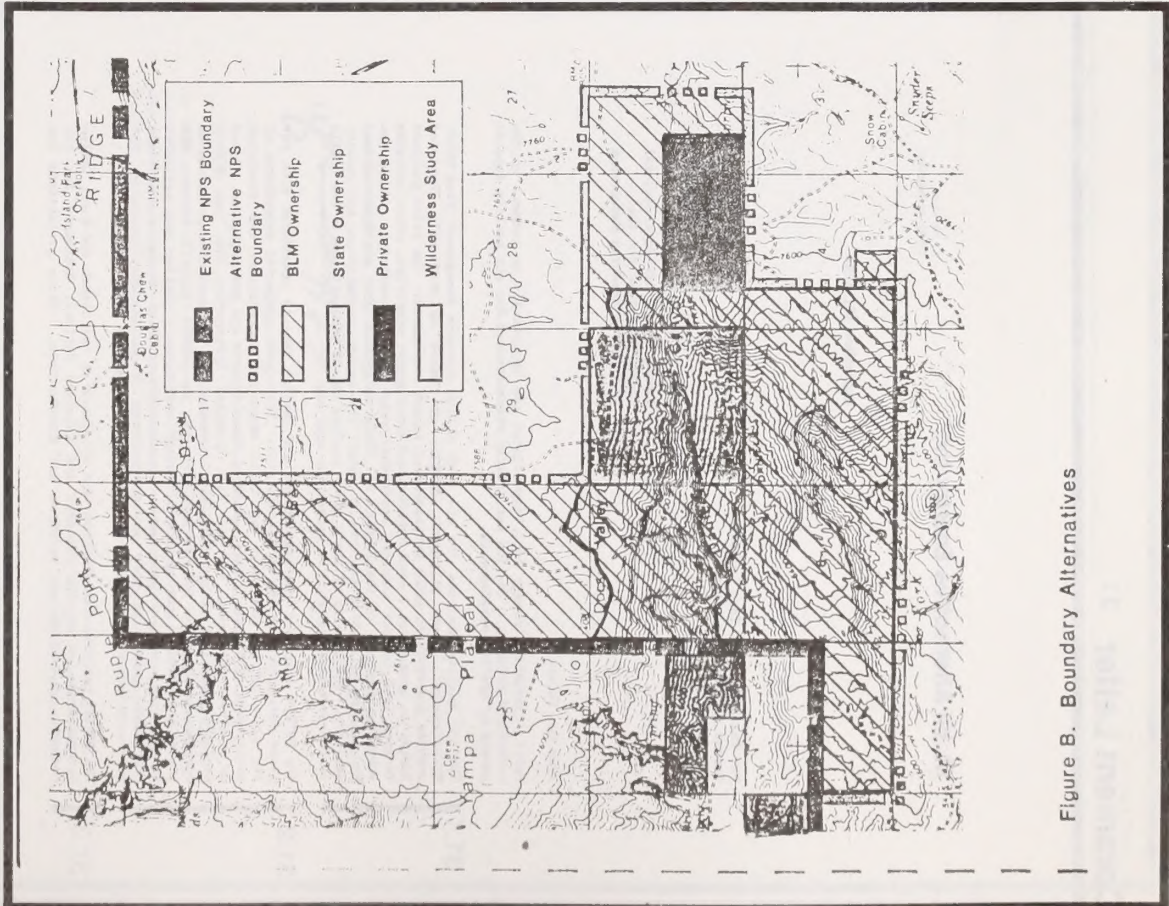


Figure B. Boundary Alternatives



BLM Letter Response

Comment Letter 31

Mobil Alternative Energy Inc.

P.O. BOX 17772  
DENVER, COLORADO 80217

September 19, 1984

Mr. Curtis Tucker, Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Comments on Draft Environmental  
Impact Statement for the  
Book Cliffs Resource Management  
Plan

Dear Mr. Tucker:

Mobil Alternative Energy Inc., appreciates the opportunity to comment on the referenced document. The BLM has greatly overestimated the air quality impacts caused by synfuel developments.

31.1

The air quality analyses for the Book Cliffs Resource Management Plan Draft Environmental Impact Statement (BCDEIS) are based on previously completed studies described in prior environmental impact statements. The prior analyses listed in attachment I used hypothetical development scenarios, crude emission factors, and inexact modeling approaches which were conservative. Mobil has submitted comments on the Federal Oil Shale Management DEIS and Utah Combined Hydrocarbon DEIS which describe in detail the weaknesses of these air quality analyses. The results of BLM's prior studies should be qualified in the BCDEIS as representing conservative worst-case analyses.

31.2

The BCDEIS described two significant air quality impacts associated with tar sands development in the Pk Springs area. These were projected exceedances of the Class II PSD increment for total suspended particulates and predicted occurrences of visible plumes. Both of these impacts are overestimated. Based on analyses performed for the Utah Combined Hydrocarbon EIS, the BCDEIS projects violations of the PSD Class II particulate increment due to tar sands surface mining in the P.R. Springs area. In the BCDEIS (p. 141), however, BLM states that surface mining in P.R. Springs will be much smaller than estimated in the Utah Combined Hydrocarbon Regional EIS. Other forms of tar sands extraction result in much lower emissions of particulate; therefore TSP concentrations will be much lower than projected in the BCDEIS.

31.3

The BCDEIS projects discoloration due to plumes at the Uintah and Ouray Indian Reservations and at the Dinosaur and Colorado National Monuments for the commodity production and balanced use alternatives. These projections are

31.1 The impacts presented in this document are "worst case" predictions. Refer to Air Quality Assumptions, page 146 of the DEIS. This has been done to comply with the National Environmental Policy Act.

31.2

See Response 31.1. The BLM recognizes that the impacts to air quality would be less than stated if the development of tar sands occurs using recovery methods other than surface mining. However, since there are no specific proposals for development at this time, the "worst case" projections were presented.

31.3

See Responses 31.1 and 31.2. Refer to page 146, "Air Quality Assumptions" for the listing of the sources used, including the Utah Combined Hydrocarbon EIS. A single plume analysis for tar sand development was used as a worst case because without specific proposals, there is no assurance that the project NO<sub>x</sub> emissions will be spread.

When specific applications for development are received, more accurate predictions can be made and analyzed in future environmental documentation.



BLM Letter Response

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Mr. Curtis Tucker  
September 19, 1984  
Page 1

apparently also based on the analysis conducted for the Utah Combined Hydrocarbon EIS. These impacts are grossly overestimated because the previous study assumed "that all projected NO<sub>x</sub> emissions within the P.R. Springs area were combined to form a single plume" (Aerocomp, 1984, p. 1-112) when in actuality these emissions will be dispersed over a wide geographic area.

We hope our comments will be helpful in preparing the final EIS.

Sincerely,

*G. L. Higgins, Jr.*

G. L. Higgins, Jr.  
Hydrological & Environmental  
Affairs Manager

TFDavis/ms  
tfd975



BLM Letter Response

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Mr. Curtis Tucker  
September 19, 1984  
Page 3

Attachment 1

- 1 Systems Applications, Inc., 1983 - Final Air Quality Technical Report for the Uintah Basin Synfuels Development Environmental Impact Statement. Prepared for the Bureau of Land Management by Systems Applications, Inc.
- 2 Bureau of Land Management, 1983 - Utah Combined Hydrocarbon Environmental Impact Statement, Richfield, Utah.
- 3 Aerocomp, Inc., - Final Air Quality Analysis for the Combined Hydrocarbon EIS, Eastern and South-Central Utah. Prepared by Aerocomp, Inc., for the Bureau of Land Management, Costa Mesa, California.
- 4 Bureau of Land Management, 1983 - Federal Oil Shale Management Program Draft Environmental Impact Statement, Denver, Colorado.
- 5 Dietrich, D. L., Fox, D. G., Wood, M. C., and Marlott, W. E., 1983 - Draft Air Quality Technical Report for the Federal Oil Shale Management Program. Prepared by Air Resource Specialists, Inc. for the Bureau of Land Management.
- 6 Aerocomp, Inc., 1984 - Ibid.



BLM Letter Response

Comment Letter 32



STATE OF UTAH  
OFFICE OF THE GOVERNOR  
SALT LAKE CITY  
84114

SCOTT M. MATTHEWS  
GOVERNOR

September 27, 1984

Mr. Curtis Tucker  
Book Cliffs Resource Management Plan Team Leader  
Bureau of Land Management  
170 South 500 East  
Vernal, Utah 84078

Dear Mr. Tucker:

The Resource Development Coordinating Committee has reviewed the Draft Book Cliffs Resource Management Plan/ Environmental Impact Statement. The state appreciates the tremendous effort that is required to produce such a complex and involved document. It is an important effort in that the document will serve as the foundation for future Bureau of Land Management (BLM) management decisions, as well as a guide, for the public, that reveals the manner by which the land will be managed for the foreseeable future.

Because of the significance of the document, it is essential that it be informative and accurate. In several essential areas the document does not contain a complete enough analysis or provide enough information for the state to make an informed decision on the effect of choosing one alternative over another. These shortfalls are detailed in the attachments. Until the state is provided with more complete information, we cannot at this time support the document or any of the proposed alternatives.

We hope that the state's specific comments will be useful to the BLM in its efforts to accurately and informatively represent the resources and opportunities for management of the Book Cliffs Resource Area. The state is supportive of the Resource Management Plan (RMP) process and is hopeful that its participation in the process will further thoughtful land planning and management.

Sincerely,

Governor

SAM:tar  
enc.



# BLM Letter Response

## Comment Letter 32

Page One of Attachments

### GENERAL COMMENTS

#### Right-of-Way Corridors

The state believes that corridors based on both need and environmental considerations can fulfill several objectives--including the one stated in the Resource Management Plan/Draft Environmental Impact Statement (RMP/DEIS): "If corridors could be located in areas that are void of other resource conflicts, the time required for issuance of rights-of-way could be significantly reduced" (page 6). The RMP/DEIS however does not provide enough information to determine whether this objective would be met by any of the alternatives.

In the effort to minimize resource conflict, the need for corridors should be accommodated with as few corridors as is reasonable. It appears that the DEIS has made no attempt to assess the minimum number and extent of corridors needed to allow for development. The only references to assessments of need are based on supposition rather than demonstrated need, e.g. "It is anticipated that mineral development, within the Book Cliffs Resource Area (BCRA), would increase demand for rights-of-way to accommodate roads, energy and water pipelines...etc." (page 6). A more detailed needs assessment should be developed.

In addition to a deficiency in demonstrated need, the DEIS falls short in presenting the resource conflict information in a manner that aids the reader in making a determination regarding the extent to which resource conflicts are being avoided in each corridor. Appendix 9 contains the essential information but needs to be carried a step further. The Environmental Impact Statement (EIS) should contain a table with the following information: a legal description of each proposed corridor, if it is an existing Right-of-Way (ROW), the number of acres within that corridor with wildlife watershed, recreation or woodlands value conflicts. In addition, a summary table should be prepared which lists for each alternative the proposed corridors, and conflicting resources by type and acreage.

#### Minerals

Oil Shale: The DEIS states that a decision needs to be made as to the "...number and locations of priority use areas for oil shale leasing" (page 6). Oil shale priority management areas have been established in the document for the Balanced Use, Commodity Production and Resource Protection alternatives. The DEIS indicates that direction for establishment of the priority management area came from the DEIS for the Federal Oil Shale Management Program (page 94). According to that document's proposed alternative, establishment of priority management areas would be a two-stage process: identification of potential reserves that "...would then be evaluated in light of other potential land uses so that areas of compatible and conflicting land uses could be identified" (page 1-10, Oil Shale DEIS).

32.1

The Federal Land Management Policy Act (FLPMA) of 1976, made provisions for the designation of corridors through land use planning. The purpose of a corridor is to channelize future rights-of-way into logical and environmentally acceptable areas. This designation helps to reduce the proliferation and environmental disturbance of unplanned rights-of-way. The opportunity exists to designate preferred areas for future rights-of-way, as well as certain exclusion areas where rights-of-way would be prohibited.

32.2

Right-of-way applications are processed on a regular basis in the BLM. These rights-of-way are related primarily to energy projects and include projects such as power and transmission lines, various types of pipelines, roads, and others. The processing of rights-of-way is expected to continue well into the future unless a demand for energy products ceases to exist.

32.3

Minimizing or eliminating the designation of corridors would have no effect on the number or type of future rights-of-way. The elimination of corridors would result in greater disturbance over wider and more environmentally sensitive areas. Designation of corridors will help concentrate the disturbance into environmentally acceptable and logical locations and should minimize environmental impacts. See Response 17.83.

32.3

The 34 pages of information presented in Appendix 9 were developed for two reasons. First, the data can be used by the public in making informed comments about a particular corridor segment. Second, the BLM decision maker can use the information to rapidly assess any potential resource conflicts and thus make an informed decision on the proposed Book Cliffs RMP and future rights-of-way.

Identification of approximate acreages of wildlife habitat, or other resource values, can be calculated by using the average corridor width of 0.6 mile (refer to page 99) and multiplying it by the length of a resource segment (Appendix 9) and converting square miles to acres. Calculation of these acreages and determination of the legal descriptions would be a costly unnecessary procedure for this step of the planning process.

Refer to Figure 2-5 for the locations of existing right-of-way corridors.



32.4

There is no indication in the DEIS that that process has been applied. The only information that the DEIS reveals are maps that display the selected management areas for each alternative. In order for the state to evaluate the desirability of each alternative the following information is needed: the criteria that selection of the areas was based on, e.g., are the selections based on expressions of interest, or other rational; are the areas free from resource conflicts--if there are conflicts present what are they and to what extent will the resource values they represent be affected under each alternative.

32.5

Oil and Gas: The state finds no problem with the application of the oil and gas category system in the land planning stage as a method to minimize resource conflicts in the developmental stage. However, the DEIS does not contain enough specific information on how the category designations were arrived at for the state to understand the relative merits of each alternative. In addition to figures 2-1, 2-8, 2-15 and 2-23 the DEIS needs to provide more detailed information. For example, instead of stating on page 14, column 2, paragraph 5 that: "Resource values totaling 186,000 acres and requiring special mitigation for protection (Category 2) would include critical antelope, deer, elk, and wild horse range...and the scenic corridor along U.S. Highway 40...", the reader should be provided with a legal description of each category within each alternative. As the document now reads it is impossible to know the number of acres protected for sage grouse leks as compared to either wetlands or wild horse range. It is also difficult to determine whether any of the designations are adequate or too high for any of the alternatives.

Tar Sands: A similar problem exist for the tar sand category designations as that outlined above for oil and gas, i.e., lack of specific information and rational to support the category designations. The DEIS states that the analysis of assignments of leasing categories "...is similar in scope to the categorization of the Special Tar Sand Areas (STSA) throughout the state within Volume II of the Utah Combined Hydrocarbon Leasing EIS." (page 94). The Utah Combined Hydrocarbon Leasing Regional Final EIS contains a much more detailed analysis of the category designations. For example, the analysis of the Sunnyside and Vicinity STSA in that Final Environmental Impact Statement (FEIS) identifies each area proposed under each category, the number of acres involved, and a description of the resource (page 70, FEIS). Without that type of analysis in the DEIS the state cannot make a judgment on the desirability of any of the alternatives.

32.6

The state is also concerned with the application of oil and gas stipulations to tar sand development. Specifically, would oil and gas stipulations adequately cover tar sand development impacts that progress beyond the drilling stage? If they would not, what measures will be taken to protect sensitive resources for the duration of tar sand development? Using the Utah Combined Hydrocarbon Leasing Regional FEIS as a guide, the Bureau of Land Management (BLM) should specifically identify what stipulations would be attached for each area proposed for categorization.

## BLM Letter Response

32.4

The process described has been applied within the development stages of the RMP.

The quality and quantity of different oil shale reserves is represented in barrels per acre, as shown in Figure 3-3. Known Oil Shale Lease Areas are shown in Figure 3-4 and a general expression of interest is shown in Figure 3-5. This and other information (refer to the bibliography) was compiled to delineate a high potential area for future oil shale development.

The area was then analyzed in relation to competing land uses, see Figures 2-6 and 3-9 through 3-17. For example, a conflict existed between recreation, wildlife, and watershed values and potential oil shale development along the White River Corridor. This area was subsequently removed from further consideration as a priority management area (see Figures 2-9, 2-16, and 2-24).

Appendix 4 has been revised in the FEIS to provide an explanation of the oil and gas category system.

32.5

The basic framework for category designations is presented within the RMP. This framework is discussed in Chapter Two under the alternative oil and gas, and tar sands discussions and shown in Figures 2-8, 2-10, 2-15, 2-17, 2-23, and 2-25. These category designations are based on consideration of various resource values as shown in Figures 2-6 and 3-9 through 3-17, with accompanying discussions in Chapter Three.

The development of specific mitigation measures in relation to legal descriptions was not completed within the RMP for three primary reasons:

- The basic resource data has gone through revisions during the RMP process; for example, note the revisions you have submitted for wildlife habitat. These types of changes would result in extensive document revisions.
- Special mitigation measures are described for 40-acre subdivisions. The complexity of presenting the various mitigation measures throughout the entire Resource Area for the four alternatives would require extensive and unnecessary data compilation.
- The final category system will include both tar sands and oil and gas mitigation measures (see Appendix 4). This system is complex and difficult to present.

The development of the special mitigation measures for specific legal subdivisions will occur during an activity planning process subsequent to implementation of the RMP. These descriptions will be based on the framework laid out in the proposed RMP (refer to Table 2-1). This information will be forwarded to the BLM State Office to be used for lease issuance. Duplicate copies will be retained in the BLM Vernal District Office and will be available for public inspection.

Appendix 4 contains a discussion of mitigation for oil and gas and tar sands.

32.6



## BLM Letter Response

**32.7** Exact locations of lands identified for acquisition or disposal are shown in Figures 2-7, 2-14, and 2-22. Refer to pages 60, 69, 70, 71, 120, 157, 168, 185, and 201 of the DEIS for further discussion of these lands.

**32.8** Thank you for the additional information about solid waste disposal standards. It has been added to the text of the FEIS.

**32.9** The text has been revised to reflect your concerns.

**32.10** The Colorado River Basin Salinity Control Act referred to on page 76 of the DEIS, was intended to imply involvement of the Colorado River Basin Salinity Control Forum.

## Comment Letter 32

Page Three of Attachments

### Land Tenure Adjustment

**32.7** Again, the lack of detailed information on categorization of lands makes an evaluation of the alternatives difficult. In the area of land tenure adjustment, a description of the lands that BLM is interested in acquiring or disposing of should be listed, including: a legal description, acreage involved, and a description of the resource and its value.

### Socioeconomics

**32.8** In general, the Environmental Impact Statement for the Bookcliffs Resource Management Plan meets the minimal socio-economic analysis that is standard in Bureau of Land Management documents. The "Affected Environment" section gives a fairly good synopsis of existing conditions from the 1983 Uintah Basin Synthetic Fuels Environmental Impact Statement, although data in several areas could have been updated. In addition on page 127 the report states that the State of Utah Community Facility Guidelines does not include a standard for solid waste disposal. This is in error; the standard is .21 acres per 1,000 persons.

In chapter 4, the document points out the difficulty in forecasting socio-economic impacts for the area because of the uncertainty surrounding the development of synfuels in the area. In addition the lack of a complete fiscal analysis of the alternatives make it difficult to determine the ability of the local communities to absorb the projected growth under the various alternatives. This complaint, however, would apply to all BLM socio-economic analyses that the reviewers are familiar with. Although the analysis is relatively weak, there appears to be no overriding issue that would contraindicate any of the proposed alternatives of management.

### Water Resources

**32.9** In the discussion of the individual alternatives (Chapter 4), it is extremely difficult to ascertain the breakdown of projected water use which is applicable to each alternative. Information critical to specific alternatives is not always included in the section discussion of those alternatives. For example, the discussion of water use for the Current Management Alternative (page 156) makes no mention of the fact that the high level scenario for synfuels development (77,000 acre-feet) is used; this comment is made in a general section on page 145. Again, Table 4-12 (page 167) has information pertinent to all alternatives, but is referred to only in the Resource Protection Alternative (page 166), and then without sufficient explanation as to how the table is to be used. We recommend that this water use information be pulled together into a cohesive and lucid package, clearly delineating the developments and associated water use assumed under each alternative.

**32.10** Salinity reduction through watershed treatment is an implied objective of all of the alternatives, but not mentioned specifically. Because of the importance of salinity control in the Colorado River Basin and past involvement of the Bureau of Land Management in activities of the Colorado



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River Basin Salinity Control Forum, we feel that such formal recognition would be appropriate. Inclusion of a related statement would also be desirable in the Soil, Water, and Air section on page 73.

In the Water Quality and Soils sections of each alternative discussion (Chapter 4), impacts of water development on salinity levels of the Colorado River are quantified, but impacts of watershed treatment are not. In a similar report (Grand Resource RMP and Final EIS), such impacts were quantified (page 2-1); we feel that such analysis would be desirable in the Book Cliffs RMP and EIS. The paper, "Salinity Control Projects: Eastern Utah," published by the Denver Service Center (BLM) in May 1982, might be helpful in this regard. Also, it is our understanding that a soil survey of Utah County is currently being conducted by the Soil Conservation Service. This survey will contain specific information related to salinity.

COMMENTS BY PAGE NUMBER

Chapter Two

Page 14, Column 1, Formulation Criteria: The BLM should include a more specific list of criteria for guiding the resolution of each issue in lieu of the general criteria contained in the DEIS. Each issue has unique parameters which should be acknowledged. At a minimum, an additional general criterion should be added which reflects consideration of the effect that a proposed management decision would have on adjacent public lands and public land users as well as coordination with federal, state and local plans and regulations.

Page 20, Column 4, Paragraph 2 and Page 26, Column 4, Paragraph 1: The management or existence of wildlife should not be dependent on anticipated conflicts with livestock. Potential conflicts exist on the BOMA. This statement provides a convenient loophole to relegate wildlife needs to the lowest priority. The statement "...wildlife habitat would be managed for optimum levels where conflicts with livestock do not exist..." should be deleted from the text.

Page 26, Column 4, Paragraph 2: The DEIS states that the Balanced Use Alternative will "[p]rovide forage to support 17,300 deer, 1900 elk, 900 antelope". The EIS should specify whether these figures are for BLM land only or unit wide. If for BLM land only, they are okay, if unit wide, they are far too low.

Page 25, Column 4, Paragraph 1 and Page 117, Column 2, Paragraph 7: The Balanced Use Alternative proposes to protect 470 acres of floodplains, stating that these 470 acres are in "poor ecological condition". The document should define "poor" ecological condition. It is the Division of Wildlife's opinion that nearly all the floodplain/ riparian zones in the BOMA are in poor ecological condition for the following reasons:

BLM Letter Response

See Response 29.10.

32.11

32.12

Additional criteria have been identified in the FEIS. See Responses 17.34 and 29.5. This document has attempted to indicate the significant impacts that would result on Federal and non-Federal lands as is required by NEPA. Coordination with Federal, State, and local plans is required in the 43 CFR 1500 regulations. This has been done. Refer to Appendix 1 and page 9, Consistency Review. Compliance with appropriate laws and regulations is mandatory and can be considered to be formulation criteria even though they are not specifically listed.

32.13

Wildlife populations will be optimized where possible, based on the results of an intensive five-year monitoring period, in cooperation with the Utah Division of Wildlife Resources. Appropriate stocking levels (livestock and wildlife) will be determined at the conclusion of the studies.

32.14

This RMP proposes management of Federal lands only. This is stated on page 3 of the DEIS under, "Scope of the Resource Management Plan". Also, refer to pages 103 and 145 of the DEIS which state that forage allocations are based on Federal lands only.

32.15

The term "poor ecological condition" is defined in the Glossary under "ecological condition". Limiting or restricting livestock on the 470 acres referenced is but one proposed action to improve floodplains. Refer to page 32 and Figure 2-6 of the DEIS which indicate that watershed treatment measures will be made on approximately 78,900 acres. The specific locations will be determined during the activity planning process. The areas you indicate are included in Figure 2-6.



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1. Cottonwood groves along the Green and White rivers are, for the most part, old and decadent with little regeneration of new trees.
2. In some areas, salt cedar encroachment is threatening to replace valuable cottonwood and willow communities.
3. The four perennial streams in the BCRA have experienced severe channel erosion and downcutting. This has lowered the water table and allowed dense stands of grease wood and big sage to invade. Riparian habitat is confined to an extremely narrow band along the margin of the stream course.

Additionally, the "Balanced Use Alternative" will provide for, and encourage, the harvest of cottonwood trees on 300 acres (page 28, column 4, paragraph 3). Given the factors working against cottonwood survival and regeneration, such a management scheme could only produce a deleterious effect on overall riparian communities.

Page 25, Column 1, Paragraph 2: The context of the paragraph leads one to believe that fawning occurs only in Main Canyon. This is misleading. It should be clarified that fawning occurs across the entire summer range, not just Main Canyon.

Page 65, Tar Sand: The "Balanced Use Alternative" proposes 110,000 acres of tar sand be leased under Category 1 (standard stipulations). Large portions of winter and summer range are found within Category 1 areas that are available for tar sand leasing--including high use areas such as Indian Ridge, Big Park, Wood Canyon, Agency Draw, Summer Range--from Sheep Ridge to the Roadless Area. Two sage grouse strutting grounds also fall within Category 1 areas (see figures 2-25, 3-11, 3-12, 3-13). How will "standard stipulations" specifically relate to, and protect, these habitats for the duration of tar sand development? (Please refer to the tar sand comments under general comments above.)

Page 78, Paragraph 2: This should be clarified to specify if wildlife increases are on BLM land only or unit wide.

Chapter Three

Page 103, Big game: The text freely uses the term "crucial" without defining it. It is erroneous to designate the entire summer and winter ranges in figures 3-10, 3-11 and 3-12 as crucial habitat. High use areas exist within the larger delineations which could indeed be termed "critical" use area. Big game are not equally distributed across their ranges and the high use areas within these ranges should be identified. The information is available from a recently completed Division of Wildlife Resources (DWR) study on the Book Cliffs that was developed in cooperation with the BLM.

BLM Letter Response

32.16

On a broad basis, we agree that harvesting and subsequently attempting to regenerate cottonwood would be difficult and unwise. However, the stands selected have special conditions: They were burned by wildfire four years ago, and were flooded during 1983 and 1984. The objective is to protect the existing natural regeneration, conduct thinning, control the invading vegetation, and harvest a second crop of trees, if feasible. These stands could be considered to be a trial management area because only 300 acres out of a potential 3,000 acres were selected.

Among local residents, there is a strong demand to harvest cottonwood for firewood, especially during winter months when areas at higher elevation are closed by snow. If this stand can be managed successfully, it will help supply winter firewood and pave the way for including additional river bottom acreage for sustained yield management.

32.17

The BLM concurs that fawning occurs in areas throughout the summer range. The reference to Main Canyon that you cited could not be located.

32.18

Two sage grouse leks fall within the PR Spring STSA. These leks have been placed into Category 3 (No Surface Occupancy). They were not placed into Category 1 as stated.

Wildlife habitat placed into Categories 2 and 3 are listed on page 65 of the DEIS. Refer to Appendix 4 (revised) for the proposed mitigation.

See Response 32.14.

32.19

The term crucial is adequately defined on page 213 of the DEIS under "crucial range". The entire summer and winter ranges utilized by deer and elk are NOT designated in figures 3-10, 3-11, and 3-12. Only the crucial areas were delineated (with the assistance of UDMR personnel from the Northeastern Regional Office in Vernal). High use, and fawning/calving areas for mule deer and elk, respectively, have been indicated on the revised figures for the FEIS, with the assistance of Jim Karpowicz, UDMR.

32.20



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32.21

Pages 106, 107 and 110: The big game range maps on these pages are totally inaccurate.

Figure 3-10: The map of antelope range should be expanded westward to the breaks of Willow Creek. Also, antelope occur on Blue Mountain.

Figure 3-11: The deer summer range shown is much too large. High use areas are much smaller than shown. The deer winter range is much too small. Some wintering areas have not been delineated. Fawning habitat, as shown, is completely inaccurate. Fawning habitat should coincide with those areas of summer range identified in high use areas. Yearlong range, as shown, is inaccurate.

Figure 3-12: Elk summer range is too large. High use areas are much smaller. Elk winter range is too small and is also difficult to identify. Summer range and winter range are continuous. Calving areas are inaccurate. They too should coincide with the high use summer range. Locations of burns and drainages is incomplete and should be identified as high use wintering areas.

Attached are Figures 3-10, 3-11 and 3-12 that have been corrected for the above inaccuracies. The maps contained in the DEIS are not acceptable. The acreages on page 107 and table 3-2 need revision to reflect the changes of the corrected maps.

32.22

Page 108, Column 1, Paragraph 2: The DEIS states that "UDWR population goals for elk are 2,300 head...". This statement must be clarified for BLM lands only.

32.23

Page 108, Upland Game: This section of upland game is incomplete and inadequate. There is no discussion of sage grouse on Blue Mountain. Tremendous effort has gone towards chuckar transplants to re-establish this species in the BCR. Transplant sites are identifiable. This minor paragraph downplays the importance of upland game and waterfowl as well as their respective habitats. It also underestimates the seriousness of potential impacts anticipated under each alternative.

32.24

Additionally, there is no discussion of the nongame resource in the BCR. This is not acceptable. Several of these species are of high state and federal interest: Western Bluebird, Sandhill Crane, Long-billed Curlew, Golden Eagle, Prairie Falcon, Cooper's Hawk, Ferruginous Hawk, Great Blue Heron, Burrowing Owl, Flamulated Owl, and Lewis' Woodpecker.

Facts of note on these include: (1) The burrowing owl is being considered for the federal threatened or endangered species list. (2) Golden eagle nests are not discussed or identified. Several active nests occur within the BCR. (3) Observations have shown that the Book Cliffs, and particularly the Bitter Creek drainage, serve as a major flyway for sandhill cranes. Sandhill's have been seen on the ground at McCook Ridge.

32.21

The wildlife maps have been revised in the FEIS and the acreages and table 3-2 have been amended to reflect the changes.

The BLM is aware that the National Park Service released antelope within the boundary of the Dinosaur National Monument in 1983.

See Response 32.14.

32.22

Resources within this document have been discussed at a level commensurate with the degree or severity of impact. Refer to page 137 of the DEIS. The BLM concurs that these species are important; however, with mitigation, no significant impacts are anticipated.

32.23

The discussion of sage grouse has been made on a general basis for the entire resource area. Sage grouse leks are shown in Figure 3-13. The location of the chuckar transplant sites is not considered to be essential for this phase of planning.

32.24

The nongame wildlife resource is important in the BCR. A recently compiled species list for the BCR is available in the Vernal District Office, and includes nongame birds and mammals, and herpetofauna. Appropriate mitigation will protect these species (Appendix 4).

The BLM has responded to the official US Fish and Wildlife Service list of Threatened and Endangered species, and candidate species for listing. This information has been included in the DEIS.



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**32.25** There is also no discussion or list of nongame fish or herpetofauna. The DEIS should discuss the brook trout fishery in the upper portions of Bitter Creek. The DEIS is incomplete without a discussion of nongame, especially the eleven species listed above.

### Chapter Four

**32.26** Page 190, Wildlife/ Wild Horses, BLM Impacts: The DEIS states on page 199 that "The combined effects of oil and gas, oil shale, and tar sand development, coupled with increases in livestock production, would be significant." This is an incredible understatement of the significance of potential mineral development given that the Balanced Use Alternative allows 605,000 acres for oil and gas leasing--standard stipulations, 413,000 acres for oil and gas leasing--special stipulations, no lands closed to oil and gas leasing, 42,000 acres for underground oil shale mining, 6,000 acres for in-situ development, 110,000 acres for tar sand development--standard stipulations, 68,000 acres for tar sand development--special stipulations, and 93,000 acres for new right-of-ways corridors.

It is difficult to perceive stable livestock numbers and increased wildlife numbers in the face of such development. This should be emphasized and elaborated upon. The effects of energy development could be catastrophic depending on the rate and location of development.

**32.27** There is no discussion of impacts to sage grouse on Blue Mountain or the Book Cliffs. There is also no discussion of impacts to other upland game species or waterfowl.

**32.28** As in Chapter 3, there is absolutely no analysis of impacts to nongame. Only endangered fish are discussed. Woodland harvesting will have an effect on Lewis' woodpecker and bald eagles which depend on cottonwoods to roost and exploit the Green and White rivers. No discussion of impacts to golden eagle nests or any of the other eleven high state and Federal interest species have been presented.

**32.29** There is no discussion of indirect impacts, i.e., increased population and housing growth. Table 4-25 presents a change in household growth over baseline. Such expansion will require the conversion of agricultural and other lands. This will eliminate pheasants, quail, waterfowl and possible sandhill crane/ whooping crane habitat.

**32.30** Mitigation is superficially dealt with, and is not adequate to deal with anticipated impacts and losses. Mitigative measures should be specifically outlined.

**32.25** Herpetofauna and nongame fishes are not discussed in the RMP because impacts to these species are not significant (see page 137 of the DEIS, Introduction). The same holds true for the very small portion of Bitter Creek under BLM Jurisdiction.

**32.26** The impacts quoted here are worst case, should all the developments occur simultaneously at their maximum levels. Refer to Appendix 5. It is believed this is unlikely to happen.

**32.27** Impacts to sage grouse populations on Blue Mountain, East Bench, Water Ridge, and the Bonanza and 2R Spring areas would be insignificant. This is based on the buffer zone surrounding known leks and mitigation provided (Appendix 4, revised). Other upland game bird species and waterfowl would also not be significantly affected given the amount of surrounding suitable habitat. Opportunities for significant population expansion would probably be limited, should the projected degree of development occur simultaneously. Generally speaking, the BCRA itself receives limited waterfowl use. Displaced birds would most likely shift their activities to adjacent habitat outside the BCRA (the Green River, Stewart Lake, Pelican Lake, Parlette Waterfowl Area, etc.). The net overall change in number of broods produced is not considered to be significant.

**32.28** Impacts to nongame wildlife are not projected to be significant based on the various development scenarios presented. In the Introduction to Chapter Four, on page 137 of the DEIS, it was stated that impacts are discussed at a level commensurate with the degree of severity of impact. Therefore, impacts to nongame species are not presented in any detail.

Displacement would occur as development proceeds, but the majority of nongame wildlife would shift to adjacent habitats.

Also on page 137 of the DEIS, under general assumptions, it was stated that "All (BLM) actions would conform with existing laws, including protection of ... endangered and threatened species". The BLM has responded to the official US Fish and Wildlife Service list of threatened and endangered species in addition to those candidate species. The BLM will consult with the Utah Division of Wildlife Resources and the US Fish and Wildlife Service on specific projects, as they develop, through the Environmental Analysis (EA) process.

**32.29** BLM agrees that no impacts (indirect) were discussed with regard to increased population/housing growth. Without specific information pertaining to population and housing growth (where located, degree of growth, etc.) the amount of indirect impact to pheasant, quail, waterfowl, and crane habitat cannot be addressed.

**32.30** Refer to revised Appendix 4 for specific mitigating measures. Additional mitigation for habitat disturbance or loss will be addressed in future Habitat Management Plans (HMPs) and mining plans.



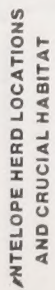


Figure 3 - 10

Crucial Antelope Range

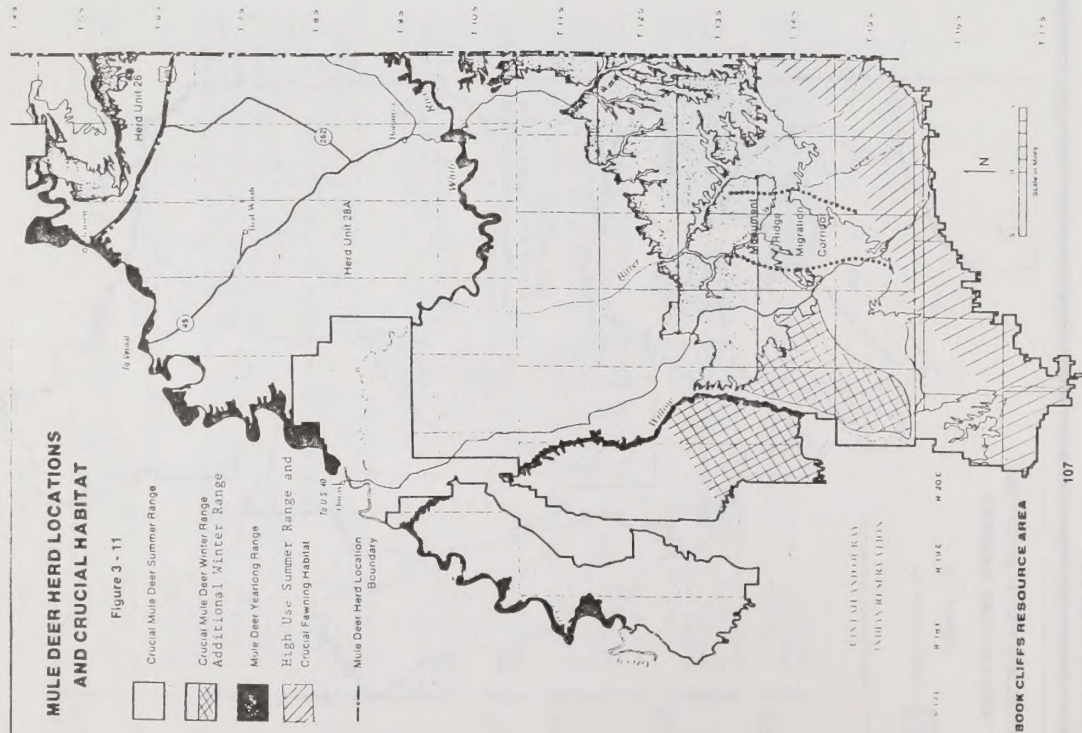
—•— Antelope Herd Location Boundary

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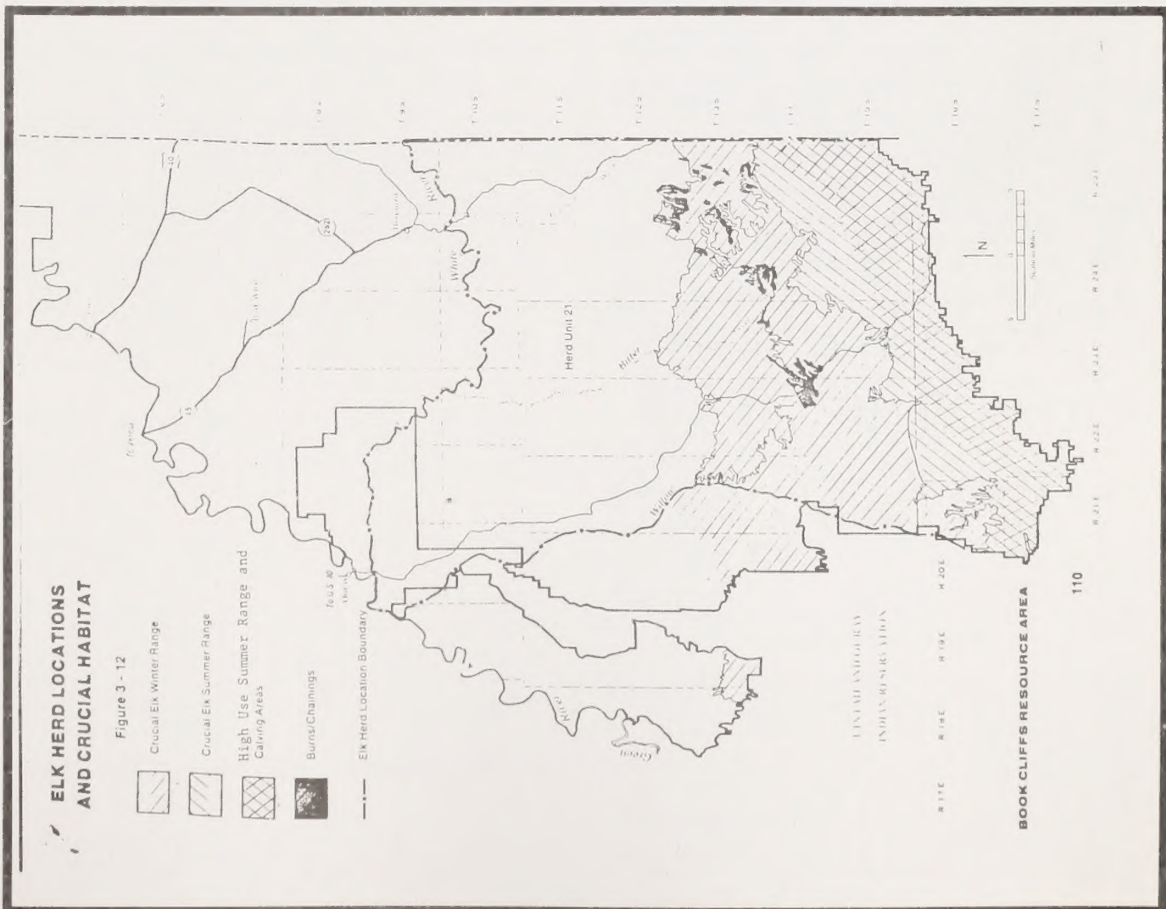


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# List of Abbreviations

<b>ACEC</b>	-Area of Critical Environmental Concern	<b>MOU</b>	-Memorandum of Understanding
<b>ADT</b>	-Additional Daily Traffic	<b>NAAQS</b>	-National Ambient Air Quality Standards
<b>AMP</b>	-Allotment Management Plan	<b>NPS</b>	-National Park Service
<b>AUM</b>	-Animal Unit Month	<b>NOSR II</b>	-Naval Oil Shale Reserve II
<b>BACT</b>	-Best Available Control Technology	<b>ORV</b>	-Off-Road Vehicle
<b>bb1</b>	-billion barrels	<b>PJ</b>	-Pinyon-Juniper
<b>bpd</b>	-barrels per day	<b>PSD</b>	-Prevention of Significant Deterioration
<b>BCRA</b>	-Book Cliffs Resource Area	<b>RMOGA</b>	-Rocky Mountain Oil and Gas Association
<b>BLM</b>	-Bureau of Land Management, U.S. Department of the Interior	<b>RMP</b>	-Resource Management Plan
<b>CCD</b>	-County Census Division	<b>SHPO</b>	-State Historical Preservation Office
<b>CEQ</b>	-Council of Environmental Quality	<b>SLBM</b>	-Salt Lake Base and Meridian
<b>CFR</b>	-Code of Federal Regulations	<b>STSA</b>	-Special Tar Sand Area
<b>CHL</b>	-Combined Hydrocarbon Leases	<b>TDS</b>	-Total Dissolved Solids
<b>cy</b>	-calendar year	<b>TSP</b>	-Total Suspended Particulate Mass
<b>DOE</b>	-Department of Energy	<b>UBS</b>	-Uintah Basin Synfuels; references EIS produced by BLM in 1983
<b>EIS</b>	-Environmental Impact Statement	<b>UDWR</b>	-Utah Division of Wildlife Resources
<b>FS</b>	-Forest Service, U.S. Department of Agriculture	<b>UGMS</b>	-Utah Geological and Mineral Survey
<b>FWS</b>	-Fish and Wildlife Service, U.S. Department of the Interior	<b>VRM</b>	-Visual Resource Management
<b>KGS</b>	-Known Geologic Structure	<b>WRDP</b>	-White River Dam Project
<b>KOSLA</b>	-Known Oil Shale Lease Areas	<b>WRSOC</b>	-White River Shale Oil Corporation
<b>MFP</b>	-Management Framework Plan	<b>WSA</b>	-Wilderness Study Area







# Glossary

**ACTIVE GRAZING PREFERENCE**—The total number of AUMs of livestock grazing on public lands apportioned and attached to the base property owned or controlled by a permittee.

**ALLOTMENT**—An area of land designated and managed for grazing of livestock.

**ALLOTMENT CATEGORIZATION**—The grouping of livestock grazing allotments into one of the following: maintain (M) current satisfactory condition, improve (I) current unsatisfactory condition, and manage custodially (C) while protecting existing resource values. The criteria used to determine the categorization are: range condition, resource potential, presence of resource use conflicts or controversy, opportunity for positive economic return, the present management situation and other criteria as appropriate.

**ALLOTMENT EVALUATION PROGRAM**—An ongoing program set up to periodically evaluate resource conditions, management practices, and facilities for a particular allotment. The evaluation includes a comparison of actual use data with utilization studies, an evaluation of trend and other special studies data along with climatological data. It may also include range inspection tours by BLM and affected users to jointly evaluate on-the-ground conditions. The frequency and intensity of evaluation will depend on the level of resource values and use conflicts occurring in the allotment e.g. "I" category allotments would receive more frequent and intense monitoring and evaluation than "C" category allotments (see Allotment Categorization).

**ALLOTMENT MANAGEMENT PLAN**—A documented program which applies to livestock operations on the public lands; prepared in consultation, cooperation, and coordination with the permittee(s), lessee(s), or other affected interests.

**ALLOWABLE CUT**—Amount of wood permitted to be harvested within a given time period.

**ALLUVIUM**—Unconsolidated rock or soil material deposited by running water, including gravel, sand, silt, clay, and various mixtures of the same.

**AMBIENT AIR QUALITY**—Prevailing condition of the atmosphere at a given time; the outside air. All lands are categorized in one of the Prevention of Significant Deterioration (PSD) classes. Class I is the most restrictive and generally applies to specific national parks and monuments. No decrease in air quality is allowed under this class. Class II areas allow some decrease in air quality. Class III areas allow for a substantial decrease in air quality, such as is found in urban areas.

**ANIMAL UNIT MONTH (AUM)**—The amount of forage necessary to sustain one cow, one horse, or five sheep for one month. Wildlife Ratio: Forage necessary to sustain 9.6 antelope, 5.8 deer, or 1.9 elk for one month.

**AQUIFER**—A water bearing bed or stratum of permeable rock, sand, or gravel capable of yielding considerable quantities of water.

**AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC)**—An area of public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes, or to protect life or provide safety from natural hazards.

**AVERAGE LIVESTOCK USE**—The average livestock grazing use of 3 representative years from 1975-1982.

**BITUMEN**—A naturally occurring semi-solid mixture of hydrocarbons that, in their naturally occurring state, can not be recovered at a commercial rate by conventional primary and secondary oil and gas recovery methods.

**BLOCKING**—A process of consolidating or making isolated land tracts contiguous through selling or exchanging with other land holders, both public and private.

**BROWSE**—That part of the current leaf and twig growth of shrubs, woody vines, and trees available for animal consumption.

**CATEGORIES (LEASING)**—The four categories used to determine leasing activities for oil and gas and tar sand were based on potential for development, other resource uses, and protection of sensitive resource values. Category 1 opens all public lands to leasing with standard stipulations. Category 2 allows leasing with standard and special stipulations to protect sensitive resource values. Category 3 allows leasing with no right of surface occupancy: recovery methods must not disturb the surface; and Category 4 closes lands to leasing.

**CLOSED**—Designated areas and trails where the use of off-road vehicles are permanently or temporarily prohibited. Use of emergency vehicles is allowed.

**COMBINED HYDROCARBON LEASE (CHL)**—A lease issued in a Special Tar Sand Area (STSA) which entitles the lessee to remove any gas and nongaseous hydrocarbon substance other than coal, oil shale, or gilsonite.

**CORD**—A unit of measure of wood volume; it is the amount of cut logs or wood in a stack measuring 4 by 4 by 8 feet.

**CORRIDOR**—A strip of land (usually a few to many times the width of a right-of-way) within which one or more existing or potential facilities may be located.

**CRUCIAL RANGE**—Range on which a species depends for survival; there are not alternative ranges available due to climate conditions or other limiting factors. May also be called key range.

**CULTURAL RESOURCES**—Those fragile and nonrenewable remains of human activity, occupation, or endeavor reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that were of importance in human events. These resources consist of (1) physical remains, (2) areas where significant human events occurred—even though evidence of the event no longer remains, and (3) the environment immediately surrounding the resource.

**CULTURAL RESOURCE INVENTORY**—A descriptive listing and documentation, including photographs and maps, of cultural resources; included are the processes of locating, identifying, and recording sites, structures, building, objects, and districts through library and archival research, information from persons knowledgeable about cultural resources, and varying levels of intensity of on-the-ground field surveys.

**CULTURAL RESOURCE SITE**—A physical location of past human activities or events. Cultural resource sites are extremely variable in size and range from the location of a single cultural resource object to a cluster of cultural resource structures with associated objects and features. Prehistoric and historic sites which are recorded as cultural resources have sociocultural or scientific values and meet the general criterion of being more than 50 years old.

**DESIGNATED CORRIDOR**—A linear area of land with legally defined and recognized boundaries and capacities having ecological, technical, economic, social, or similar advantages over other areas for the present or future location of transportation or utility rights-of-way, and which have been identified and designated by legal public notice.

**DIRECTIONAL DRILLING**—Slant drilling or drilling on an angle. Directional drilling is utilized when the operator is not allowed to occupy the surface of a given tract of land, but still wishes to drill a structure or target beneath that tract.



## GLOSSARY

**DISPOSAL AREA**-A parcel of public land that could pass from government ownership through sales or exchanges or both. Some land may be retained in public ownership based on site-specific criteria.

**ECOLOGIC CONDITION**-The present state of vegetation of an ecologic site in relation to the climax (natural potential) plant community for that site. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the climax plant community for the site. Ecological condition is rated as follows: excellent-more than 75 percent of the climax vegetation, good-51 to 75 percent of the climax vegetation, fair 26 to 50 percent of the climax vegetation, poor-less than 26 percent of the climax vegetation.

**ECOLOGIC SITE**-A distinctive geographic unit that differs from other kinds of geographic units in its ability to produce a characteristic natural plant community. An ecologic site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other ecologic sites in the kind or proportion of species or in total production.

**EDGE EFFECT**-The phenomenon that occurs when two or more habitat types come together and create more favorable wildlife habitat than either type could provide alone.

**EXCLUSION AREAS**-Land areas determined to be unavailable for corridor allocation or facility siting for reasons of unsuitability, legislative classification or allocation to uses incompatible with facility siting.

**EXTENSIVE RECREATION MANAGEMENT AREA**-Areas of limited recreation opportunities and where intensive recreation management is not required. Minimal recreation management actions are adequate in these areas.

**FEDERAL LANDS**-Lands owned by the United States, without reference to how the lands were acquired or what Federal agency administers the lands, including mineral estates underlying private surface.

**FIRE MANAGEMENT**-The use of full suppression, modified suppression, and prescribed fire to achieve desired management objectives.

**FIRE MANAGEMENT PLAN**-A source document containing fire history, ecological impacts, and proposed fire actions for manageable units of public lands.

**FIVE YEAR MONITORING PERIOD**-See MONITORING.

**FLOODPLAIN**-The nearly level alluvial plain that borders a stream and is subject to inundation (flooding) during high water.

**FORAGE**-All browse and herbaceous foods that are available to grazing animals. It may be grazed or harvested for feeding.

**FORAGE MONITORING**-An ongoing program designed to measure changes in plant composition, ground cover, animal populations, and climatic conditions on the public rangeland. Vegetation studies are used to monitor changes in rangeland condition and determine the reason for any changes that are occurring. The vegetation studies consider actual use, utilization, trend, and climatic conditions.

**FORAGE POTENTIAL**-The optimum amount (lbs/acre) of forage that could be produced in a grazing allotment that is stable, self-perpetuating and in equilibrium with its physical habitat.

**FULL GRAZING PREFERENCE**-The total number (active and suspended nonuse) of animal unit months of livestock grazing on public land apportioned and attached to base property owned or controlled by a permittee.

**FULL SUPPRESSION**-Taking aggressive action on all fires on or threatening the public lands, with sufficient forces to contain the fire during the early burning period.

**GRAZING SYSTEM**-A systematic sequence of grazing treatments applied to an allotment to reach identified multiple-use goals or objectives by improving the quality and quantity of vegetation.

**GRAZING TREATMENT**-A prescription under a grazing system which grazes or rests a unit of land at particular times each year to attain specific vegetation goals.

**HABITAT**-The place where animals or plants normally live, often characterized by a dominant plant and co-dominant form (pinyon-juniper habitat).

**HYDROCARBONS**-Organic chemical compounds of hydrogen and carbon atoms which form the basis of all petroleum products.

**IN LIEU SELECTION**-A process by which the State of Utah (and other public land states) may select Federal lands within its boundaries because of Federal appropriation of grant lands before title could pass to the State. The State is entitled to select acreage equal to the amount that was appropriated.

**IN SITU**-In place; in the original location.

**IN SITU EXTRACTION**-Extracting the oil from tar sand or oil shale while it is still in place by injecting steam, solvents, and/or heat.

**KEY AREA (Forage)**-An area that receives at least moderate use, has the productive capability to respond to management and is important from a forage standpoint.

**KEROGEN**-The organic, oil-yielding material present in oil shale. Kerogen is not a definite compound but a complex mixture varying from one shale to another. When heated to above 900°F, kerogen decomposes to yield a liquid oil, light gases, and a solid residue.

**KNOWN GEOLOGIC STRUCTURE (KGS)**-Geologic strata known to contain oil or gas because it has been penetrated by a producing or producible oil or gas well.

**LEASABLE MINERALS**-Minerals such as coal, oil shale, oil and gas, phosphate, potash, sodium, geothermal resources, and all other minerals that may be acquired under the Mineral Leasing Act of 1920, as amended.

**LEASE**-A document through which interests are transferred from one party to another, subject to certain obligations and considerations.

**LEASE (MINERAL)**-A contract between a landowner and another, granting the latter the right to search for and produce gas, hydrocarbons, or other mineral substances upon payment of an agreed-upon rental.

**LEASE CONVERSION**-The process of converting an existing oil and gas lease in a Special Tar Sand Area (STSA) to a Combined Hydrocarbon Lease (CHL). The conversion is completed through approval of a plan of operation outlining how the hydrocarbon resource will be developed.

**LIMITED**-Designated areas and trails where the use of off-road vehicles is subject to restrictions, such as limiting the number or types of vehicles allowed, dates, and times of use; limiting use to existing roads and trails; or limiting use to designated roads and trails.

**LOCATABLE MINERALS**-Minerals that may be acquired under the Mining Law of 1872, as amended.

**LONG-TERM**-A period of time in excess of ten years.

**MITIGATION MEASURES**-Actions which could be taken to lessen the adverse effects of proposed project development upon existing resources.

**MODIFIED IN SITU RETORTING**-A process in which a portion of the oil shale deposit is removed from underground and the remaining oil shale is fractured to create a highly permeable zone to allow passage of air and fire to heat the kerogen and release the shale oil.



## GLOSSARY

**MODIFIED SUPPRESSION**-A deviation from normal fire suppression which is based on a fire land use decision, or where controlling fire is extremely difficult, or where the values-at-risk, do not warrant the expense associated with normal suppression procedures.

**MONITORING (Vegetation Soils)**-An ongoing program designed to determine the effect of management practices, relative to livestock, wildlife and wild horse use on the soil and vegetative resource. The studies include actual use, utilization, trend, climatological, and other special vegetative analysis. The studies are evaluated periodically as a part of the "Allotment Evaluation Program". Adjustments in management practices (stocking levels, animal numbers, seasons of use, grazing systems, etc.) are made as a result of the monitoring and evaluation program. Note: Current range policy (WO IM 94-135) requires that a Five Year Monitoring Period be established following completion of the EIS to serve as a base for arriving at a proper stocking level.

**MULTIPLE-USE MANAGEMENT**-The management of public lands and their various resource values so that they are utilized in the combination that will best meet the needs of the people.

**NONIMPAIRMENT CRITERIA**-A series of guidelines which govern surface disturbing activities on lands being studied by BLM for inclusion in the National Wilderness Preservation System. The guidelines require that lands be managed so as to not impair their suitability for designation as wilderness. Any authorized activities must be temporary in nature and not degrade the area's wilderness values. Disturbed areas must be capable of being reclaimed so that they are substantially unnoticeable by the time the Secretary of the Interior makes his recommendation on Wilderness Areas to the President.

**OFF-ROAD VEHICLE (ORV)**-Any motorized vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain.

**OIL**-All nongaseous hydrocarbon substances other than those substances leaseable as coal, oil shale, or gilsonite (including all vein-type solid hydrocarbons).

**OIL SHALE**-A layered sedimentary rock which contains abundant quantities of an organic material known as kerogen. When heated above 900°F, the kerogen in the rock decomposes, releasing a liquid oil product, shale oil.

**OPEN**-Designated areas and trails where off-road vehicles may be operated without restriction.

**OUTCROPS (TAR SAND)**-Those parts of a tar sand deposit exposed at the surface.

**OVERBURDEN**-Material of any nature that overlies a deposit of useful materials, such as tar sand or oil shale.

**PALEONTOLOGY**-A science dealing with the life and past geological periods as known from fossil remains.

**POPULATION**-All the individuals belonging to a single plant or animal species occupying a particular area of space.

**PRIOR STABLE POPULATION NUMBERS**-A number of animals, by species (derived from wildlife population dynamics data and long-term observations), previously supported at or near the grazing capacity of the given wildlife herd unit.

**PRIORITY MANAGEMENT AREA**-An area where high quality oil shale deposits exist and oil shale development would generally be acceptable. Oil shale lease tracts would be located within these areas at a future date.

**PUBLIC LAND**-Lands administered by the Bureau of Land Management, vacant, unappropriated, and unreserved lands which have never left Federal ownership; also, lands in Federal ownership which were obtained by the Government in exchange for public lands or for timber on public lands.

**PUBLIC WATER RESERVE**-A parcel of land, usually 40 acres, withdrawn from settlement, mineral location, sale, or entry, containing a spring or water hole which is reserved for public use. Public water reserves were established by Executive Order #107 dated April 17, 1926.

**RECREATION VISITOR DAY**-Recreation use totalling 12 hours by one or more persons.

**RIPARIAN HABITAT, AQUATIC (STREAMSIDE)**-Vegetation communities found in association with streams (both perennial and intermittent), lakes, ponds, and other open water. This unique habitat, comprising less than 1 percent of the land area, is crucial to the continued existence of the fish species known to occur. Streamside vegetation maintains high water tables, stabilizes streambanks, creates quality fishery habitat, and maintains water quality. It is also essential to most terrestrial wildlife species.

**RIPARIAN HABITAT, TERRESTRIAL**-Vegetation communities found in association with either open water or water close to the surface; includes such habitat features as meadows, aspen stands, and/or other trees and shrubs. This unique habitat is crucial to the continued existence of the majority of the terrestrial wildlife species known to occur. Many species are found nowhere else.

**ROOM-AND-PILLAR MINING**-A process in which some of the oil shale deposit is removed, creating underground rooms. Some of the deposit is left in place in the form of pillars to support the mine roof.

**ROTATION GRAZING SYSTEM**-An intensive system of management where grazing is deferred on various parts of the range during succeeding years.

**SALABLE MINERALS**-Minerals such as common varieties of sand, stone, gravel, and clay that may be acquired under the Materials Act of 1947, as amended.

**SATURATION**-A measure of the extent to which pore space in the sand or rock is occupied by bitumen or oil. Also, the extent to which pore space in soil is occupied by water.

**SCOPING PROCESS**-An early and public process for determining the nature, significance, and range of issues to be addressed related to a proposed action.

**SEASON LONG USE**-Grazing of a management area or range allotment continuously for a specified season or period of time (i.e. November 1 to April 30).

**SEMI-PRIMITIVE-MOTORIZED**-Areas which are accessible by vehicular travel but which remain essentially undeveloped.

**SITE POTENTIAL**-The expression of an ecologic site relative to the climax plant community. It represents the full ability (natural potential) of a particular site as influenced by soils, topography, climate, etc. to produce a certain mix of plants and volume of vegetative matter.

**SPECIAL TAR SAND AREA (STSA)**-An area designated by the Department of the Interior's Orders of November 20, 1980 (45 Federal Register 76800) and January 21, 1981 (46 Federal Register 6077), and referred to in those orders as Designated Tar Sand Areas, as containing substantial deposits of tar and sand. Eleven STSAs are recognized in Utah by the Combined Hydrocarbon Leasing Act of 1981. The Act provided for the conversion of existing oil and gas leases in STSAs to Combined Hydrocarbon Leases (CHLs). This Act also required competitive leasing for currently unleased lands within STSAs.

**SPECIES, CANDIDATE**-An animal or plant which may be designated threatened or endangered in the near future. This status offers no legal protection under the Endangered Species Act of 1973.

**SPECIES, ENDANGERED**-An animal or plant whose prospects of survival and reproduction are in immediate jeopardy, and as is further defined by the Endangered Species Act of 1973, as amended.



## GLOSSARY

**SPECIES, SENSITIVE**-One of two groups of plants or animals: (A) Those which could be appropriate for listing as threatened or endangered, but do not have sufficient data to be used in the listing process. These species need more study; or (B) Those which are not being considered as candidates for the listing process, but are known to be rare, site specific, endemic or in potentially threatened land use areas (the BLM gives sensitive species the same consideration for protection as threatened or endangered species).

**SPECIES, THREATENED**-Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range, and as is further defined by the Endangered Species Act of 1973, as amended.

**SUSTAINED YIELD**-A silvicultural practice in which the volume of wood cut is equal to growth over the long run.

**TAR SAND**-Any consolidated or unconsolidated rock (other than coal, oil shale, or gilsonite) that either: (1) contains a hydrocarbonaceous material with a gas-free viscosity at original reservoir temperature greater than 10,000 centipoise; or (2) contains a hydrocarbonaceous material and is produced by mining or quarrying. Tar sand constitutes one of the largest known nonfluid petroleum resources in the United States. Approximately 90 percent of the United States' tar sand (27 billion barrels) is located in Utah.

**TAR SAND DEPOSIT**-A natural bitumen (oil-impregnated) containing or appearing to contain an accumulation of tar sand, separated or appearing to be separated from any other such accumulation.

**TERTIARY**-Of, belonging to, or designating the geologic time, system of rocks, and sedimentary deposits of the first period of the Cenozoic era, extending from the Cretaceous period of the Mesozoic era to the Quaternary period of the Cenozoic era, characterized by the appearance of modern flora and of apes and other large mammals.

**TIMBERLANDS**-Those sites supporting stands composed of Douglas fir, aspen, ponderosa pine, and cottonwood.

**TOTAL SUSPENDED PARTICULATES**-All solid or semi-solid material found in the atmosphere i.e. dust.

**TRACT U-a**-One of two Federal oil shale lease areas in Utah. Each lease area is 5,120 acres in size, and is leased by the White River Shale Oil Corporation, Inc. (see Tract U-b).

**TRACT U-b**-The second of the two Federal oil shale lease areas in Utah. This lease area is the same size and adjacent to the first. This area is also leased by the White River Shale Oil Corporation, Inc. (see Tract U-a).

**TREND**-The direction of change in range condition. The factors that influence trend are: changes in plant composition, abundance of young plants, plant residues, plant vigor, and the condition of the soil surface.

**VISUAL RESOURCE MANAGEMENT (VRM)**-The planning, designing, and implementation of management objectives for maintaining scenic value and visual quality on public lands.

**VISUAL RESOURCE MANAGEMENT CLASSES**-The five degrees of acceptable visual change within a characteristic landscape:

**CLASS I**-Areas (preservation) provide for natural ecological changes only. This class includes primitive areas, some natural areas, some wild and scenic rivers, and other similar sites where landscape modification activities should be restricted.

**CLASS II**-(partial retention of the landscape character) includes areas where changes in any of the basic elements (form, line, color, or texture) caused by management activity should not be evident in the characteristic landscape.

**CLASS III**-(partial retention of the landscape character) includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape.

**CLASS IV**-(modification of the landscape character) includes areas where changes may subordinate the original composition and character.

**CLASS V**-(rehabilitation or enhancement of the landscape character) includes areas where change is needed to restore the landscape.

**WATERSHED**-A total area of land above a given point on a waterway that contributes runoff water to the flow at that point.

**WILDERNESS CHARACTERISTICS**-Factors identified by Congress in the Wilderness Act of 1964 which should be used to determine the suitability of land for inclusion into the National Wilderness System. They include: size, naturalness, outstanding opportunities for solitude or a primitive and unconfined type of recreation, and supplemental values such as geological, archaeological, historical, ecological, scenic, or other features. It is required that the area possess at least 5,000 acres or more of continuous public land or be of a size to make practical its preservation and use in an unimpaired condition; be substantially natural or generally appear to have been affected primarily by the forces of nature, with the imprint of cultural modifications being substantially unnoticeable; and have either outstanding opportunities for solitude or a primitive and unconfined type of recreation. Congress stated that a wilderness area may also have supplemental values or other features of scientific, educational, scenic, or historical value.

**WILDERNESS STUDY AREA (WSA)**-A roadless area which has been found to have wilderness characteristics.

**WILD HORSES**-All unbranded and unclaimed horses and their progeny that roam public lands, or that use these lands as all or part of their habitat after December 15, 1971.

**WITHDRAWAL**-Actions which restrict the use of public land and segregate the land from the operation of some or all of the public land and/or mineral laws. Withdrawals are also used to transfer jurisdiction of management to other Federal agencies.

**WOODLANDS**-Lands producing tree species that are typically utilized as nonsawtimber products and sold in units other than boardfeet i.e. pinyon and juniper.

**YEAR-LONG USE**-Grazing of a management area or range allotment continuously throughout the year.



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The following symbols are used to help the reader locate copies of the references. The appropriate symbols will appear at the end of each citation.

C-Available for inspection at Bureau of Land Management, Colorado State Office, 1037 20th Street, Denver, Colorado 80202.

E-Available for inspection at Bureau of Land Management, Division of Environmental Impact Statement Services, 555 Zang Street, First Floor East, Denver, Colorado 80228. Copies of some items are available at cost for reproduction.

L-Available through public library loan system.

M-Available for inspection at Bureau of Land Management, Moab District Office, 82 East Dogwood, P.O. Box 970, Moab, Utah 84532.

S-Available for inspection at Bureau of Land Management, Utah State Office, University Club Building, 136 East South Temple, Salt Lake City, Utah 84111.

V-Available for inspection at Bureau of Land Management, Vernal District Office, 170 South 500 East, Vernal, Utah 84078.

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# APPENDIX 1

## CONSULTATION AND COORDINATION

### SUMMARY OF PROJECT SCOPING

An Environmental Impact Statement (EIS) must be prepared when a Federal agency considers implementing actions within its jurisdiction that may result in significant impacts to the environment. EISs aid Federal officials in making decisions by presenting the environmental facts on a proposed project and its alternatives. The first step in preparing an EIS is to determine the scope of the project and the range of actions, alternatives, and impacts to be included in the document.

The Council on Environmental Quality regulations (40 CFR, Parts 1500-1508) require an early scoping process to determine the significant issues related to the proposed action and alternatives which should be addressed in the EIS. The principal purpose of the scoping process is to identify important issues, concerns, and potential impacts that require detailed analysis in the EIS and to eliminate insignificant issues and alternatives from detailed analysis.

#### Method of Scoping

The scoping process for the Book Cliffs Resource Management Plan (RMP) consisted of Federal Register Notices, public meetings, agency meetings, mailouts for written comments, and informal conversations with interested parties within the affected area.

With the assistance of Federal and State agencies, local entities, and private individuals, the significant issues and concerns were identified for analysis in the EIS. Insignificant issues were also identified so that they could be eliminated from the scope of the EIS.

The dates and times for the Book Cliffs RMP public scoping meeting and the availability of background information were publicized within the affected area through the local media. Notification of the meetings was also sent to government organizations and other potentially interested groups within the area.

In the early stages of the project (1980), informative discussions were held with local residents and elected and appointed officials in the project area. As a result of these discussions, preliminary issues were identified, and attendance at the forthcoming public meetings was encouraged.

Representatives of the Vernal District then met with members of local governments to present the preliminary issues for their comments and suggestions.

A brochure requesting public comments on the planning guidelines for the Book Cliffs Resource Area was sent to government organizations, interested groups and concerned citizens in March 1981. Comments received aided the BLM in refining the issues.



Appendix 1 (Continued)

Meeting With Elected and Appointed Officials  
of Uintah County  
April 16, 1980

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Attendees	Representing
Charles Henderson	Energy Director, Uintah Basin Association of Governments
Neil Domgaard	Uintah County Commissioner
Roland Merkley	Uintah County Commissioner
Merrill Mecham	Uintah County Commissioner
Lloyd Ferguson	Vernal District Manager, BLM
Dean Evans	Bookcliffs Area Manager, BLM
Dave Moore	Chief of Planning & Environmental Coordination, Vernal District, BLM
Ralph Brown	Planning Coordinator, Vernal District, BLM

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Summary of Issues:

1. Need for county input, especially on energy, wildlife, and grazing.
  2. Need for study on gravel pit sitings.
  3. Need for road rights-of-way to be wide enough to handle multiple uses.
  4. Need for input from ranchers/miners.
  5. Concern with possible revocation of withdrawals.
  6. Need for using topographic and ortho-photo quads in establishing Book Cliffs planning needs.
- 

On February 4, 1983, a letter listing the issues and planning criteria was sent to all organizations, groups, and individuals that had aided in the planning process. The letter asked for additional comments and invited them to attend a scoping meeting to discuss possible management alternatives for the BCRA.

A formal public meeting was conducted in Vernal, Utah on April 5, 1983. Interested individuals, groups, and local agencies were given the opportunity to voice their concerns and raise issues which they felt merited consideration in the alternatives for the EIS. Results from this meeting and responses from requests for written comments were as follows:



# Appendix 1 (Continued)

## Public Scoping Meeting Book Cliffs RMP April 5, 1983

Name	Representing
Robert Fuller	BIA
Glen B. Wells	Utah Power & Light
Ken Parr	Ute Tribe
Jason Cuch	Ute Tribe
Val Sorenson	Self
J. Bowden	Self
Roland McCook	BIA
Neil Domgaard	Uintah County Commission
Laura Chew	Self
Dean Chew	Self
Katherine Smith	ERA-Ashley Valley Realtors
Jon Hill	Atchee Ridge/Book Cliffs Cattlemen
Anthony Rampton	Fabian & Clendenin
Robert Heistand	Paraho Development Corporation
Scott Patterson	Mountain Bell
Jeff Henderson	Moon Lake Electric Association
John Davis	Self
Tim Blackham	Mountain Fuel Supply Company
Reed Clayson	Synfuel Energy & Development Corporation
Carlin Cuch	Ute Tribe
Ken Harper	U.S. Fish & Wildlife Service
Bob Shaffer	Desert G&T Co.
Leo Snow	Uintah County Commission
Robert Matthews	Moon Lake Electric Association
Byron Merrell	Uintah County Commission
Rex Headd	Mountain Fuel Resources
John Henderson	Mountain Fuel Supply
Rusty Lundberg	Geokinetics
Marvin Jackson	Self
Kevin Scott	Gulf Oil
Charles Cameron	Ute Tribe
Gregg Oaks	Moon Lake Electric Association
Meril Snow	Self
Berne Pulsipher	Mountain Bell



## Appendix 1 (Continued)

### Summary of Comments:

1. Concern that wildlife ranges/populations are unknown.
2. Concern with whether wildhorse herds should be expanded or merely maintained at present levels.
3. Concern about exclusion areas for utilities on private lands.
4. Concern that rights-of-way should be considered outside of designated corridors on case-by-case basis.
5. Concern with movement of elk onto Reservation lands.
6. Designation of areas where building stone may be removed.
7. Concern with future access to service areas by Utah Power and Light/Moon Lake Electric Association.
8. Designation of ORV/dirt bike areas and attendant regulations/controls.
9. Need for identifying location of the existing oil/gas leases in Hill Creek.
10. Concern with access for deer hunters.
11. Concern with utility corridor conflicts/overlaps/planning.
12. Concern with traffic controls/highway protection.
13. Concern with the effects of mineral development on livestock/wildlife.
14. Concern with future use of water/watershed.

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After the alternative scoping meeting was held, the BLM mailed out new project descriptions describing the changes in the project and inviting more public comments regarding the project scope, issues, and concerns. This information was sent to all interested persons as well as all attendees of the public scoping meetings. The following responses were received from this mailout around May 20, 1983, and were included in determining the alternatives of the EIS.



## Appendix 1 (Continued)

### Comments on Draft Alternatives Book Cliffs RMP

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Name	Representing
Dorothy Harvey	Intermountain Water Alliance
Lorin Merkley	Self
Peter Hovingh	Self
Clinton Harrison	Self
Lawella Nielson	Self
Ken Husch	Local merchant
Frank Hackler	H&H Firewood Co.
Ron Hardlinger	T&J Yamana
Mike Adams	Self
Meril Snow	Self
Ernest Chandler	Self
G. Merrell	Self

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#### Summary of Comments:

1. Need for preserving scenic, wildlife, and recreation qualities, especially on the White River Corridor, Green River, Red Wash, and between U.S. 40 and Bonanza Highway.
2. Need for off-road vehicle designation and controls.
3. Need for protection of riparian habitat.
4. Need for firewood cutting/chaining controls.
5. Need for protection/improvement of Musketshot Springs.
6. Concern with control of wild horses.
7. Development of water sources.

#### Results of Scoping

The results of the scoping process along with further input from various Federal and State agencies identified the most significant issues associated with the project; these issues have been covered in detail in this EIS.

Issues identified by meeting participants and through written input have been used to determine the scope of the Book Cliffs Resource Area RMP EIS. The extent to which each resource is analyzed was partially determined by the concerns raised in the scoping meetings.



PUBLIC INVOLVEMENT

In the course of preparing the draft EIS for the Book Cliffs Resource Management Plan, BLM communicated with many Federal, State, and local agencies; elected representatives; environmental and citizens groups; industries; and individuals. Many of these people participated in the public scoping meeting which was held in April, 1983. The following agencies have provided input and/or will receive copies of the EIS.

Federal Government Agencies

- Department of the Interior
  - Fish and Wildlife Service
  - National Park Service
  - Bureau of Indian Affairs
- Department of Agriculture
  - Forest Service
  - Soil Conservation Service
- Advisory Council on Historic Preservation
- Department of Transportation
  - Federal Highway Administration
- Environmental Protection Agency
- Department of Energy
- Department of the Navy

State Governments and Agencies

- Utah Division of Wildlife Resources
- Utah State Clearinghouse

Indian Tribes

- Ute Indian Tribe

Local Governments

- Utah
  - Uintah County Commission
  - Grand County Commission
- Colorado
  - Moffat County Commission

(A detailed mailing list is available upon request from Curtis Tucker, BLM, Vernal District Office.)



## APPENDIX 2

### MAJOR FEDERAL AUTHORIZING ACTIONS

- SECTION A: Major Federal Authorizing Actions  
 SECTION B: Major State Authorizing Actions  
 SECTION C: Major County and Local Authorizing Actions  
 SECTION D: Resources Requiring Formal Consultation  
 SECTION E: Federal Laws Affecting Oil Shale and Tar Sand Development

#### SECTION A

Agency	Nature of Action	Authority	Project Feature
DEPARTMENT OF THE INTERIOR Bureau of Land Management	Grant rights-of-way	Title V of Federal Land Policy and Management Act of 1976, 43 U.S.C. Sections 1761-1771; CFR Part 28; and Section 28 of the Mineral Leasing Act, 30 U.S.C. Section 185; 43 CFR Part 2880	Corridor facilities; access roads, power transmission line, water supply pipeline, ore conveyors, underground mining tunnels, communication lines
	Grant rights-of-way on BLM, F&WS and FS land	Section 28 of the Mineral Leasing Act of 1920, 30 U.S.C. Section 185; 43 CFR Part 2880	Oil pipelines
	Issue leases and permits	Section 302 of Federal Land Policy and Management Act of 1976; 43 U.S.C. Section 1732	Facilities (other project components) not related to rights-of-way
	Issue temporary use permits	Title V of Federal Land Policy and Management Act: Section 28 of the Mineral Leasing Act of 1920	Temporary construction activities



APPENDIX 2  
Major Federal Authorizing Actions

- SECTION A: Major Federal Authorizing Actions  
 SECTION B: Major State Authorizing Actions  
 SECTION C: Major County and Local Authorizing Actions  
 SECTION D: Resources Requiring Formal Consultation  
 SECTION E: Federal Laws Affecting Oil Shale and Tar Sand Development

SECTION A

Agency	Nature of Action	Authority	Project Feature
DEPARTMENT OF THE INTERIOR Bureau of Land Management	Grant rights-of-way	Title V of Federal Land Policy and Management Act of 1976, 43 U.S.C. Sections 1761-1771; CFR Part 28; and Section 28 of the Mineral Leasing Act, 30 U.S.C. Section 185; 43 CFR Part 2880	Corridor facilities; access roads, power transmission line, water supply pipeline, ore conveyors, underground mining tunnels, communication lines
	Grant rights-of-way on BLM, F&WS and FS land	Section 28 of the Mineral Leasing Act of 1920, 30 U.S.C. Section 185; 43 CFR Part 2880	Oil pipelines
	Issue leases and permits	Section 302 of Federal Land Policy and Management Act of 1976; 43 U.S.C. Section 1732	Facilities (other project components) not related to rights-of-way
	Issue temporary use permits	Title V of Federal Land Policy and Management Act: Section 28 of the Mineral Leasing Act of 1920	Temporary construction activities



Appendix 2 (Continued)  
SECTION A  
Major Federal Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
National Park Service	Issue antiquities or archaeological resource permit to excavate or remove archaeological resources on Public Lands	Antiquities Act of 1906; 16 U.S.C. Sections 431-433; Archaeological Resources Protection Act of 1979, 16 U.S.C. Sections 470aa-470ll; 43 CFR Part 3	Access roads, power transmission lines, communication lines, water supply pipeline, and ore conveyor on public lands
Bureau of Indian Affairs (Uintah and Ouray Agency)	Grant rights-of-way to cross Indian lands	25 U.S.C. Sections 323-328; 25 CFR Part 161	Access roads, power transmission lines, water supply pipeline, product pipeline
U.S. Fish and Wildlife Service (Ouray National Wildlife Refuge)	Concur in right-of-way crossing National Wildlife Refuge Land	Section 28 of the Mineral Leasing Act of 1920, 30 U.S.C. Section 185; 50 CFR Section 29.21	Shale oil pipeline
ENVIRONMENTAL PROTECTION AGENCY	Review impact on threatened or endangered species of fish, wildlife, or plants	Section 7 of Endangered Species Act of 1973, 16 U.S.C. Section 1536; 50 CFR Part 402	All
	Receive and approve spill prevention control and countermeasure plan	Section 311 of Federal Water Pollution Control Act Amendment of 1972, 33 U.S.C. Section 1321; 40 CFR Part 112	Intermediate and product storage tanks
	Issue Resource Conservation and Recovery Permit for treatment, storage, or disposal of hazardous waste	Section 3005 of Resource Conservation and Recovery Act of 1976, 42 U.S.C. Section 6925; 40 CFR Parts 122, 124, 260-267	Hazardous waste disposal



Appendix 2 (Continued)  
SECTION A  
Major Federal Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
DEPARTMENT OF TRANSPORTATION Federal Aviation Administration	Register generators of hazardous waste	Section 3002 of Resource Conservation and Recovery Act of 1976, 42 U.S.C. Section 6922; 40 CFR Parts 122, 262	Hazardous waste generation
	Issue a nondischarging National Pollutant Discharge Elimination System Permit	Section 402 of Federal Water Pollution Control Act Amendments of 1972, as amended; 33 U.S.C. Section 1342; 40 CFR Parts 122, 123, 124, and 125	Water ponds and treatment plants
	Issue permit for reinjection of mine water	Part C of Safe Drinking Water Act, 42 U.S.C. Sections 300h to 300h-3; 40 CFR Parts 122, 124, 146	Underground injection wells. (The Utah Department of Health, Division of Environmental Health, Bureau of Water Pollution Control has applied for primacy under the UIC program. Once primacy is attained, this permit will not be required.)
	Permit manufacture of shale oil	Section 3 of Toxic Substances Control Act, 15 U.S.C. Section 2604	Shale oil retorts
	Issue air space permit for airport-related air space determination and air space obstruction clearance for project facilities	Section 1101 of the Federal Aviation Act of 1958, 49 U.S.C. Section 1501; 14 CFR Part 77	Stacks at plant site and other facilities



Appendix 2 (Continued)

SECTION A

Major Federal Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
Federal Highway Administration	Issue permit(s) to cross Federal-aid highways	23 U.S.C. Sections 116, 123, 315; 23 CFR Part 645 Subpart B	Water pipelines, ore conveyor, access roads, etc.
Research and Special Programs Administration Office of Operations and Enforcement	Regulate safe construction and operation of pipelines	18 U.S.C. Section 834; 49 U.S.C. Section 1655; 49 CFR Part 195	Pipelines
DEPARTMENT OF AGRICULTURE U.S. Forest Service (Uinta and Wasatch-Cache National Forests)	Concur in right-of-way grant for crossing National Forest System land	Section 28 of the Mineral Leasing Act of 1920, 30 U.S.C. Section 185; 43 CFR Part 2880; 36 CFR Part 251	Shale oil pipeline
	Issue permit for borrow materials	Materials Act, 30 U.S.C. Sections 601, 602; 30 CFR Section 251.4	Construction materials for shale oil pipeline
	Issue special use permit for constructing rights-of-way and facilities	Title V of the Federal Land Policy and Management Act of 1976, 43 U.S.C. Sections 1761-1771; Section 28 of the Mineral Leasing Act, 30 U.S.C. Section 185	Construction of shale oil pipeline (including access roads, field offices, and staging areas)
	Issue antiquities or archaeological resource permit to excavate and remove archaeological resources on National Forest System lands	Antiquities Act of 1906, 16 U.S.C. Sections 431-433; Archaeological Resources Protection Act of 1979, 16 U.S.C. Sections 470aa-470ll; 43 CFR Part 3	Construction of shale oil pipeline (including access roads, field offices, and staging areas)



Appendix 2 (Continued)  
SECTION A  
Major Federal Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
DEPARTMENT OF THE ARMY U.S. Army Corps of Engineers	Issue (Section 404) permit for placement of dredged or fill material in waters of the United States or their adjacent wetlands	Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. Section 1344; 33 CFR Parts 323, 325	River or stream crossings for access roads, water supply pipeline, product pipelines, etc.
	Issue permit (Section 10) for structures or work in or affecting navigable waters of the U.S.	Section 10 of the River and Harbor Act of 1899, 33 U.S.C. Section 403; 33 CFR Parts 320-322, 329	Water diversion facilities, dams, wells, and construction resulting in alterations to water course
DEPARTMENT OF THE TREASURY Bureau of Alcohol, Tobacco, and Firearms	Issue permit(s) to purchase, store, and use explosives	Section 1102(a) of Organized Crime Control Act of 1970, 18 U.S.C. Sections 841-848; 27 CFR Part 181	Transport and use of explosives
DEPARTMENT OF LABOR. Mine Safety and Health Administration	Approve mine safety plans and facilities	Federal Mine Safety and Health Act of 1977, 30 U.S.C. Sections 801 et. seq.; 30 CFR Chapter 1.	Mining and crushing facilities
Occupational Safety and Health Administration	Inspect surface construction for worker safety	Occupational Safety and Health Act of 1970, 29 U.S.C. Sections 651 et. seq.; 29 CFR Part 2200	Construction of processing surface facilities (Federal role limited to assisting and auditing Utah Industrial Commissions enforcement of state OSHA plan)
FEDERAL COMMUNICATIONS ADMINISTRATION	License to operate industrial radio service	Section 303 of Communications Act of 1934, 47 U.S.C. Section 303; 47 CFR Parts 90, 94	Communications



Appendix 2 (Continued)

SECTION A

Major Federal Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
DEPARTMENT OF ENERGY Economic Regulatory Administration	Grant exemption from requirement that new major fuel-burning installation be designated to burn coal	Energy Supply and Environmental Coordination Act of 1974, 15 U.S.C. Sections 791-798; 10 CFR Parts 303-305	A "major fuel-burning installation" includes any boiler, burner, or other combustion or any combination thereof, at a single site which burns fossil fuels

E=Enercor-Mono Power, M=Magic Circle, P=Paraho; S=Syntana-Utah; and T=Tosco.

\*Unless specified, the authorizing actions apply to all of the proposed projects.

\*\*Applies only to Tosco Salt Lake City Alternative Product Pipeline.



Appendix 2 (Continued)  
SECTION B  
Major State Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
UTAH DEPARTMENT OF NATURAL RESOURCES AND ENERGY Division of State Lands	Grant rights-of-way	Utah Code Annotated Section 65-2-1 (1978)	Corridor facilities; access roads, power transmission line, water supply pipeline, ore conveyors, shale oil pipeline, communication lines
	Issue special use permits for State Forest land	Utah Code Annotated Section 65-2-1 (1978)	Corridor facilities; access roads, power transmission line, water supply pipeline, ore conveyors
	Approve state mineral leases	Utah Code Annotated Section 65-1-18 (1978); Utah Rules and Regulations Governing the Issuance of Mineral Leases	Mines
Division of Water Rights	Well driller's permit	Utah Code Annotated Section 73-5-25 (1981)	Water wells
	Permits to construct diversion facilities or change place or nature of use of an existing water right	Utah Code Annotated Section 73-3-3 (1981)	Water diversion facilities
	Certificate to appropriate water	Utah Code Annotated Section 73-3-1 to 29 (1981)	Use of previously unappropriated water
	Approve plans and specifications for construction or repair of dams	Utah Code Annotated Section 73-3-5 (1981)	Construction of any impoundment dam



Appendix 2 (Continued)  
SECTION B  
Major State Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
Division of Forestry and Fire Control	Approval of plan to alter natural stream	Utah Code Annotated Section 73-3-29 (1981)	Alteration of a natural stream
	Burning permit during closed fire season	Utah Code Annotated Section 24-2-12 (1976)	Burning of slash and waste
	Issue Notice of Intention to Commence Exploratory Drilling; Notice of Intention to Commence Mining	Utah Code Annotated Section 40-8-13, (Supp. 1981); Rule M-3, Board of Oil, Gas, and Mining Form MR-1	Exploratory drilling and coring; mining operation and reclamation
UTAH DEPARTMENT OF DEVELOPMENT SERVICES Division of State History	Issue permit to survey or disturb archaeological or paleontological site on state land	Utah Code Annotated Section 63-18-25 (1978)	All
	Review impact on historical or cultural sites on or eligible for National Register of Historic Places	Section 106 of National Historical Preservation Act of 1966, 16 U.S.C. Section 470f; 36 CFR Part 800	All
	Issue encroachment permits	Utah Code Annotated Section 27-12-11 (1976)	State and Federal highway crossings
UTAH DEPARTMENT OF TRANSPORTATION Highway Patrol	Issue overweight truck permits for delivery of materials to plant site	Utah Code Annotated Section 27-12-155 (1976)	Delivery of materials



Appendix 2 (Continued)  
SECTION B  
Major State Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
UTAH DEPARTMENT OF HEALTH, DIVISION OF ENVIRONMENTAL HEALTH  Bureau of Air Quality	Issue open burning permit	Utah Code Annotated Section 26-13-6(1) (Supp. 1981)	Burning of slash and waste material
	Approve notice of intent to construct source of air pollution (includes prevention of significant deterioration (PSD) permit)	Utah Code Annotated Section 26-13-6 (Supp. 1981)	Construction and operation activity
	Issue permit for construction and operation of sanitary and industrial wastewater treatment facilities	Utah Code Annotated Section 26-11-8 (Supp. 1981)	Wastewater treatment facilities
UTAH DEPARTMENT OF WATER POLLUTION Division of Environmental Health  Bureau of Solid and Hazardous Waste	Issue permit for reinjection of mine water	Utah Code Annotated Section 26-11-6(14) (Supp. 1981)	Underground injection wells
	Issue permit to treat, store, or dispose of hazardous waste	Utah Code Annotated Section 26-14-8 (Supp. 1981)	Disposal of Hazardous waste
	Approval for disposal of solid waste	Utah Code Annotated Section 26-14-6(6) (Supp. 1981)	Solid waste disposal



Appendix 2 (Continued)  
SECTION B  
Major State Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
Bureau of Public Water Supply	Issue permit for drinking water system	Utah Code Annotated Section 26-12-5(a) (Supp. 1981)	Drinking water system
UTAH INDUSTRIAL COMMISSION Division of Occupational Safety and Health	Inspect surface construction for worker safety	Utah Code Annotated Sections 35-91 et seq. (1974)	Surface shale processing facilities downstream of pyrolysis units
DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT Division of Community Development	Receive Socioeconomic Impact Alleviation Plan	Utah Code Annotated Section 63-51-10 (Supp. 1981)	Socioeconomic and population increases



Appendix 2 (Continued)  
SECTION C  
Major County and Local Authorizing Actions

Agency	Nature of Action	Authority	Project Feature
UINTAH COUNTY	Issue building permits	Uintah County Zoning Ordinance	Plant site and surface facilities
	Issue temporary use permits	Uintah County Zoning Ordinance	Temporary construction of offices and sheds
	Issue conditional use permit	Uintah County Zoning Ordinance	Solid waste disposal sites
	Issue extraction of earth products permit	Uintah County Zoning Ordinance	Borrow areas
	Issue excavation permit	Grand County Zoning Ordinance	Excavation
GRAND COUNTY	Issue building permit	Grand County Zoning Ordinance	Plant site and surface facilities
	Approval of master plan by the Grand County Planning Commission and County Commissioners	Grand County Zoning Ordinance	New town site
	Issue inspection and letter of approval for public health-related facilities on plant sites and at construction camps	Utah Code Annotated, 1981 Supplement; Title 26, Chapter 24, Section 1-24	Construction camps, individual wastewater disposal systems, non-public water systems, and food service facilities at the plant sites
UINTAH BASIN DISTRICT HEALTH DEPARTMENT			



Appendix 2 (Continued)  
SECTION D  
Resources Requiring Formal Consultation

Item	Basis of Requirement	Agency to be Consulted
Cultural (Historical) Resources	Antiquities Act 1906 Preservation Act 1966 Executive Order 11593	State Historic Preservation Officer (SHPO)
Floodplains	Executive Order 11988	Council of Environmental Quality, Environmental Protection Agency, Fish and Wildlife Service, and Public Notice
Endangered or Threatened Species	Section 7 of Endangered Species Act	Fish and Wildlife Service
Fish and Wildlife Coordination Act	Section 662(a) of Fish and Wildlife Coordination Act	Fish and Wildlife Service and State Game and Fish Agency
Prime or Unique Farmlands	Farmland Protection Policy	Soil Conservation Service State Conservationist (Document Review)
Water	Section 404 Clean Water Act	Corps of Engineers, State Engineer
	Safe Drinking Water Act	Division of Environmental Health
Water Rights	Federal Land Policy and Management Act	State Engineer
Wetlands	Executive Order 11990	Issue Public Notice
Parks, Recreation Areas, Refuges, Historic Sites	Section 4(f) Department of Transportation Act of 1966	Department of Transportation



Appendix 2 (Continued)  
SECTION E  
Federal Laws Affecting Oil Shale and Tar Sand Development

Popular Name	Public Law/U.S. Code Citation	Purpose/Requirements	Major Relevance
Antiquities Act of 1906	59-209; 16 U.S.C. 431-433	Regulates antiquities excavation and collection on lands under Secretary of Interior's jurisdiction	Mitigates potential harm to historical and archaeological resources
		Protects historic monuments and ruins on Public lands	
Archaeological and Historical Preservation Act of 1974; Archaeological Salvage Act	93-291, 86-523; 16 U.S.C. 469	Provides for recovery of data from areas to be affected by Federal actions, including Federally licensed projects	Mitigates potential harm to historical, archaeological, and paleontological resources
		Provides for preservation of data (including relics and specimens) at every Federal construction project and Federally licensed project	Mitigates potential harm to historical and archaeological resources
Archaeological Resources Protection Act of 1979	96-95	Protects archaeological resources by regulating excavation and collection on Public and Indian lands	Mitigates potential harm to historical and archaeological resources
Bald Eagle Protection Act of 1969, as amended	86-70; 16 U.S.C. 668	Protects bald and golden eagles	May require certain limitations on developments



Appendix 2 (Continued)  
SECTION E  
Federal Laws Affecting Oil Shale and Tar Sand Development

Popular Name	Public Law/U.S. Code Citation	Purpose/Requirements	Major Relevance
Clean Air Act Amendments of 1977	95-95; 42 U.S.C. 7401	Establishes requirements for areas failing to attain National Ambient Air Quality Standards (NAAQS)	Limits industrial development within and adjacent to areas exceeding NAAQS (nonattainment areas) and protects air quality in areas where the quality is better than NAAQS (attainment areas).
		Provides for prevention of significant deterioration of areas where air is cleaner than NAAQS	
		Modifies 1970 Clean Air Act provisions regarding Federal facilities, enforcement strategies, and interstate air pollution	
Clean Water Act of 1977	95-217; 33 U.S.C. 1251	Establishes effluent limitation for new and existing industrial discharge into U.S. waters	May reduce development options if antidegradation policy restricts discharges into high quality waters
		Provides mechanism to restore and maintain integrity of the Nation's waters	Treatment facilities in areas with rapidly expanding infrastructures must meet water quality standards
Endangered Species Act of 1973, as amended	93-205; 16 U.S.C. 1531	Protects endangered and threatened species and critical habitat from Federal activities	Requires prior consultation with Fish and Wildlife Service



Appendix 2 (Continued)  
SECTION E  
Federal Laws Affecting Oil Shale and Tar Sand Development

Popular Name	Public Law/U.S. Code Citation	Purpose/Requirements	Major Relevance
Fish and Wildlife Coordination Act of 1934, as amended	85-624; 16 U.S.C. 661	Requires consultation about water resource development actions which might affect fish or associated wildlife resource	Mitigates potential Federal oil shale development impacts
Historic Preservation Act of 1966	89-665; 16 U.S.C. 470	Establishes system to classify properties on or eligible for inclusion on Historic Register  Mandates Federal agency consultation with Advisory Council and State Historic Preservation Officers	Mitigates potential harm to historical and archaeological values
Migratory Bird Treaty Act of 1941, as amended	16 U.S.C. 701-718h	Protects migrating birds not covered by other Federal laws	Provides legislation to purchase areas for refuges and to provide for migratory bird conservation
National Environmental Policy Act of 1969 (NEPA)	91-190; 42 U.S.C. 4321	Encourages productivity and harmony between man and his environment; ensures that environmental values are considered in decisionmaking; makes environment protection a duty of every Federal agency	Provides legislative mandate to consider environmental review of major Federal action in energy development
		Requires impact statements for major Federal actions with potentially significant impacts	Impact statement process must be integral part of oil shale leasing system



Appendix 2 (Continued)  
SECTION E  
Federal Laws Affecting Oil Shale and Tar Sand Development

Popular Name	Public Law/U.S. Code Citation	Purpose/Requirements	Major Relevance
Resource Conservation and Recovery Act of 1976	94-580; 42 U.S.C. 6901, as amended	Establishes guidelines for collection, transport, separation, recovery and disposal of solid wastes	Mining locations may be affected by EPA regulations governing disposal of oil shale mining wastes
		Creates major Federal hazardous waste regulatory program	Industry may have stringent permit requirements if wastes classified by EPA are hazardous
		Provides assistance to establish state or regional solid waste plans	
Safe Drinking Water Act of 1977	95-190; 42 U.S.C. 300f-j	Protects water quality; sets national standards	Requires states (or EPA) to regulate harmful injections which endanger public drinking water system



## APPENDIX 3

# ALLOTMENT MANAGEMENT CATEGORY CRITERIA

### Maintain Category Criteria

Present range condition is satisfactory.

Allotments have moderate or high resource production potential, and are producing near their potential (or trend is moving in that direction).

No serious resource-use conflicts exist.

Opportunities may exist for positive economic return from public investments.

Present management appears satisfactory.

Other criteria appropriate to the environmental impact statement (EIS) area.

### Improve Category Criteria

Present range condition is unsatisfactory.

Allotments have moderate to high resource production potential and are producing at low to moderate levels.

Serious resource-use conflicts exist.

Opportunities exist for positive economic return from public investments.

Present management appears unsatisfactory.

Other criteria appropriate to EIS area.

### Custodial Category Criteria

Present range condition is not a factor.

Allotments have low resource production potential, and are producing near their potential.

Limited resource-use conflicts may exist.

Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.

Present management appears satisfactory or is the only logical practice under existing resource conditions.

Other criteria appropriate to EIS area.



# **APPENDIX 4**

## **SPECIALIZED MINERAL TERMINOLOGY**

\*NOTE: This appendix is a complete revision from the information that was presented in the Draft EIS.

### **CATEGORY SYSTEM**

#### **INTRODUCTION**

The oil and gas category system was originally placed into effect in 1976 through a process that included the preparation of the Vernal District Oil and Gas Environmental Assessment Record and the categorization of lands. The category system was established to provide an efficient, responsive oil and gas leasing system while giving consideration to other resource values that require protection.

In this document, the category system has been expanded to include combined hydrocarbons. Oil and gas and tar sands are treated separately within the text of this Environmental Impact Statement (EIS) for ease of understanding. Each mineral resource has been categorized under the various alternatives. After the decision is made on the selection of the Book Cliff's Resource Management Plan, the separate mineral resources will then be combined into a single category system for BLM State Office use. Due to the complexity of this system, it is not be presented within this document.



## OIL AND GAS

### Category 1 - Open Lease Areas

This category includes lands that possess the resource values which would not be in serious conflict with mineral exploration and development. These lands are leased subject to standard stipulations which provide for the protection of the resource values and environmental components commonly associated with the public lands and require the lessee to take certain measures to mitigate possible impacts that might be created by exploration and development. These stipulations do not impose major restrictions on the lessee activities, but provide for operations under controlled conditions.

The 43 CFR 3100 lists information that is required in the environmental report which is submitted by the oil and gas lessee to BLM. This information is commonly reported by the lessee in the 13 point surface use plan which is required as part of every oil and gas lease. The 13 point plan is written in response to the BLM notice to the lessee's No. 6 (NTL-6) which also gives BLM the authority to evaluate the environmental impacts. An 'on-site' inspection with BLM and lessee representatives is conducted in relation to the surface use plan. This inspection is made to determine the most feasible and environmentally acceptable areas for well sites, access roads, and other proposed surface use areas. An environmental analysis is prepared by BLM in response to the proposal. The analysis identifies methods for mitigating adverse environmental effects associated with the proposed action. Other oil and gas regulations and lease stipulations refer to the 10-point subsurface plan, procedures for disposal of produced water,



reporting of undesirable events such as spills, fires, etc. This type of information is standard with every oil and gas lease, regardless of category.

#### Category 2 - Lease Areas Requiring Special Stipulations

Some areas contain resource values where a conflict with mineral exploration and development might occur; therefore, leasing in this category is subject to special stipulations that provide additional protection to the watersheds, critical wildlife habitat areas, recreation areas, unique archaeological and historical sites, etc. The special stipulations may limit exploration to various times of the year, prescribe special construction techniques, limit the location of developments, or require other similar special resource protections.

The following special stipulations are in addition to the lease terms and standard stipulations, and are necessary to protect specific resource values on the lease area:

1. All of the land in this lease is included in (recreation or special area, etc.). Therefore, no occupancy or disturbance of the surface of the land described in this lease is authorized. The lessee, however, may extract the oil and gas resources in this lease by directional drilling from sites outside this lease. If a proposed drilling site lies on land administered by the Bureau of Land Management, a permit for use of the site must be obtained from the BLM District Manager before drilling or other development begins.
2. No access (or work trail or road, earth cut or fill, structure or other improvement), other than an active drilling rig, will be permitted if it can be viewed from the (road, lake, river, etc.).
3. No occupancy or other activity on the surface of (legal subdivision) is allowed under this lease.



4. No occupancy or other surface disturbance will be allowed within \_\_\_\_\_ feet of the \_\_\_\_\_ (road, trail, river, creek, canal, etc). This distance may be modified when specifically approved in writing by the authorized officer of the Federal surface management agency.
5. No drilling or storage facilities will be allowed within \_\_\_\_\_ feet of (live water, the reservoir, the archaeological site, the historical site, the paleontological site, etc.) located in (legal subdivision). This distance may be modified when specifically approved in writing by the concurrence of the authorized officer of the Federal surface management agency.
6. No occupancy or other surface disturbance will be allowed on slopes in excess of \_\_\_\_\_ percent, without written permission from the authorized officer of the Federal surface management agency.
7. In order to (minimize watershed damage, protect important seasonal wildlife habitat, etc.) exploration, drilling, and other development activity will be allowed only (during the period from \_\_\_\_\_ to \_\_\_\_\_ during dry soil period, over a snow cover, frozen ground). This limitation does not apply to maintenance and operation of producing wells. Exceptions to this limitation in any year may be specifically approved by the authorized officer of the Federal surface management agency.
8. In order to minimize watershed damage during muddy and/or wet periods the authorized officer of the Federal surface management agency may prohibit exploration, drilling, or other development. This limitation does not apply to maintenance and operation of producing wells.
9. The \_\_\_\_\_ (trail/road) will not be used as an access road for activities on this lease, except as follows: (No exceptions, weekdays during recreation season, etc.).
10. No \_\_\_\_\_ will be allowed within \_\_\_\_\_ feet of the \_\_\_\_\_. This area contains \_\_\_\_\_ acres and is described as follows:

Reasons:

First blank to be filled in with one or more of the following: drilling, storage facilities, surface disturbance or occupancy. Second and third blanks to be filled in with one or more of the following:

- a. \_\_\_\_\_ feet wildlife habitat essential to specific species



- b. \_\_\_\_\_ feet peripheral or unique vegetative type
- c. 200 feet either side of centerline of roads or highways
- d. 500 feet of normal high water line on all streams, reservoirs, lakes
- e. 600 feet of all springs
- f. 400 feet of any improvements

Note: Stipulation No. 10 could be used in place of Stipulation Nos. 4 and 5.

11. In order to (minimize) (protect) \_\_\_\_\_

\_\_\_\_\_ will be allowed only during \_\_\_\_\_.  
 This does not apply to maintenance and operation of producing wells and facilities. Lands within leased area to which this stipulation applied are described as follows:

Reasons:

First blank to be filled in with one or more of the following:

- a. Watershed damage
- b. Soil Erosion
- c. Seasonal wildlife habitat (winter range, calving/lambing area, etc.)
- d. Conflict with recreation

Second blank to be filled in with one or more of the following:

- a. Surface-disturbing activities
- b. Exploraion
- c. Drilling
- d. Development

Third blank to be filled in with one or more of the following:

- a. Period from \_\_\_\_\_ to \_\_\_\_\_
- b. Dry soil periods
- c. Over the snow
- d. Frozen ground



Note: Stipulation No. 11 could be used in place of Stipulation No. 4, giving greater definition as to restriction.

12. The lessee is given notice that all or portions of the lease area contain special values, are needed for special purposes or require special attention to prevent damage to surface resources. Any surface use or occupancy within such areas will be strictly controlled. Use or occupancy will be authorized only when the lessee/operator demonstrates that the area is essential for operations and when the lessee/operator submits a surface use and operations plan, which is satisfactory to the Federal surface management agency, for the protection of these special values and existing or planned uses. Appropriate modifications to the imposed restrictions will be made for the maintenance and operations of producing oil and gas wells.

After the Federal surface management agency has been advised of the proposed surface use or occupancy on these lands, and on request of the lessee/operator, the Federal surface management agency will furnish further data on such areas, which now include but are not limited to:

(Legal land description to lot and/or quarter, quarter section.)

Reasons for Restriction

Duration of Restriction: (year-round, month(s))

Prior to acceptance of this stipulation the prospective lessee is encouraged to contact the Federal surface management agency for further information regarding the restrictive nature of this stipulation.

Note: Stipulation No. 12 is not exclusionary but it notifies the lessee/operator that the described lands contain special values and that these values must be considered in the proposed operating plan. This stipulation is an alternative to many of the above stipulations.

### Category 3 - Open Lease Areas Subject to No Surface Occupancy

These areas have special resource values or land uses with which surface mineral operations would not be compatible. These areas could include camping and picnic areas, research areas, scenic areas, recreation and public purposes, significant historical and archaeological areas, etc.



Drilling would be permitted but would be limited to whipstocking or slant drilling from off-site locations. Use of this category is, therefore, limited to that feasible for drilling in this fashion. A maximum of one mile is considered feasible (using present technology) if approachable from two or more sides (one-half mile if that area can be approached from only one side).

#### Category 4 - No Lease Areas

These are areas where mineral leasing is undesirable pending further planning or special studies and includes areas that are too large in size to permit slant drilling or which include critical resource values that cannot be adequately protected by the lease categories. Examples could include areas of potential wild and scenic river corridors, and larger high quality scenic areas where roads, pipelines, drilling activities, etc. are not compatible with management for these uses. As further information is obtained, and public needs are better understood, these areas may continue to be closed to leasing or may be made available.

No lease is issued; therefore, no stipulations required.

### COMBINED HYDROCARBON LEASING

#### General

The Combined Hydrocarbon Leasing Act of 1981 (43CFR 3140 and 3150, 95 Stat. 1070) changed the definition of oil to include oil saturated sands (tar



sands). Conventional oil and gas and nonconventional tar sand recovery are provided for in the same combined hydrocarbon lease.

#### Leasing Within Special Tar Sand Areas

1. Companies which held existing oil and gas leases could have converted to a combined hydrocarbon lease before November 16, 1983. They must have submitted a plan of operations for tar sand development which must be approved by the BLM. A separate EIS would be prepared in response to these conversions.
2. The oil and gas lease term could be automatically extended by demonstrated oil and/or gas production on the leased land. Those leases that were not converted to a combined hydrocarbon lease will have no provisions for the development of tar sands.
3. Leases under the Competitive Combined Hydrocarbon Lease Program could be scheduled, after completion of the Book Cliffs RMP. These leases could be issued on currently unleased areas or areas where oil and gas leases expire. These leases will be consistent with stipulations developed in the RMP and related environmental analysis.

#### Mitigation

Although tar sands and oil and gas are treated separately within the RMP, a single category system will emerge during subsequent activity planning. During that phase, tar sand stipulations would be developed that will be



separate from the oil and gas stipulations but will be attached to the same lease. Some of the special oil and gas stipulations may be applicable to certain aspects of tar sand development, such as exploratory drilling operations. In addition, certain stipulations could limit the lessee to conventional oil and gas recovery with no provision for tar sand development. Other stipulations could notify the lessee that renewable resource values identified in the RMP would require special consideration in the plan of operations.

Prior to any surface disturbance, a plan of operations must be submitted. The plan would be required to meet the requirements of 43 CFR 3160 for drilling and exploration work and 43 CFR 3570 for mining operations. An environmental analysis (EA or EIS) would be prepared in response to the submitted plan of operations. Site specific stipulations would be developed which would deal with a wide range of subjects including, but not limited to, reclamation procedures, erosion control methods, threatened and endangered plants and animals, cultural resource protection, and watershed and wildlife protection.

Mitigation identified could then result in various modifications of the mining plan to provide for environmentally acceptable development.



## FAVORABILITY SYSTEM

The favorability and certainty system, presented for the BCRA on Figure 3-1, and subsequently described in this appendix, is an attempt to quantitatively assess the potential for future oil and gas development.

### Favorability 1 (f1)

Lands designated as having the lowest favorability, "f1", for oil and gas will be within a geologic environment dominated by igneous and metamorphic rocks that constitute a regional basement at or near the surface; or by intense recent tectonic activity, particularly where characterized by pervasive fracturing or brecciation. In such areas, source rocks either do not exist or have been strongly altered, with concomitant loss of most of the contained volatiles and, in some cases, the alteration of remnant carbon to graphite. Similarly, traps or reservoir rocks either have not developed or have been altered or destroyed by intense igneous, metamorphic, and tectonic events. Consequently, in most of these present-day geologic environments any preexisting concentrates of oil and gas would have been vaporized by the intense heat, or lost to the hydrosphere or atmosphere upon a loss of confining pressure during fracturing and brecciation.

### Favorability 2 (f2)

The geologic environment of an area rated at the "f2" level for oil and gas is considered to have a potential only for small, widely scattered oil and gas pools. The size of recoverable hydrocarbon accumulations in such an



environment would be anticipated to be less than 10 million barrels of oil or, if gas, no more than 60 billion cubic feet. The cumulative thickness of sedimentary rocks in the "f2" geologic environment will generally be less than a few thousand feet thick. Such a relatively thin stratigraphic sequence generally limits the volume of both favorable source and reservoir rocks; hence the expected small size and low frequency of oil and gas pool.

Moreover, any medium-size or larger accumulations that may have existed in earlier favorable environments in the area have since been destroyed or reduced in size by recent tectonic events and/or fresh water flushing.

#### Favorability 3 (f3)

Lands considered favorable for oil and gas at the "f3" level are within an environment that may contain either densely-spaced small pools, or scattered, moderately-large pools. Recoverable fluid hydrocarbons are anticipated to be between 10 and 50 million barrels of oil, or between 60 and 300 billion cubic feet of gas. The geologic environment deemed likely to host such intermediate quantities of oil and gas would generally contain a sedimentary sequence less than 5,000 feet thick. This rock sequence must be heterogeneous in composition and contain at least one organically-rich marine formation to provide a hydrocarbon source. Moreover, the geologic history of the area must be such that the presence of stratigraphic and structural traps can be reasonably inferred. Finally, evidence of possible fresh-water flushing of potential reservoir rocks must be minimal.



#### Favorability 4 (f4)

Lands designated "f4" must be within a geologic environment that is favorable for large accumulations of oil and gas. Recoverable fluid hydrocarbons in such an environment are anticipated to be more than 50 million barrels of oil, or if gas, more than 300 billion cubic feet. The geologic environment must include a heterogeneous sequence of sedimentary rocks with a thickness generally well over 5,000 feet. Organically-rich marine source rocks should be relatively abundant. Numerous reservoir rocks and stratigraphic and structural traps must be confidently inferred to exist in the area based on its geologic history. Multiple oil and gas-reservoirs stacked in vertical succession should be reasonably inferred to occur in this geologic environment. Recent tectonism must be at a minimum, if present at all. There should be no evidence of possible fresh-water flushing of potential reservoir rocks.

#### CERTAINTY SYSTEM

The degree of certainty of oil and gas occurrence is based on the proximity of direct evidence that either supports or refutes the existence of the resource in the immediate environment of the area. Direct evidence includes the following: (1) surface oil and gas seeps caused by leakage from fractured reservoirs; (2) tar sands or oil-impregnated sandstone deposits (oil shales are nonmatured or only partly matured source rocks and are treated as a separate resource); (3) results from exploration and development (includes wildcat, deeper-and shallower-pool tests, outpost or extension tests,



and development wells); and (4) analytical data such as composition and specific gravity that offer proof of fluid-hydrocarbon presence.

Geophysical data, chiefly seismic, are often mistakenly assumed to provide "proof", or at least a high degree of certainty, that oil and gas resources actually occur in an area. However, geophysical data are no more than tools used to interpret the stratigraphy and structure of a region, as a means of determining its degree of "geologic favorability" for oil and gas. As such, geophysical data will be used as a measure of favorability--not certainty.

Data on well yield and on oil and gas quality are considered economic information and are used along with other data to estimate the contribution that oil and gas will make to the Overall-Importance Rating of the area. Such data include: flow or pumping rates for wells; specific-gravity determinations; chemical analyses for sulfur, nitrogen, and the amounts of various metal and mineral contaminants (in the case of crude oil); and hydrogen, sulfide, nitrogen, carbon dioxide, helium analyses (in the case of raw gas).

#### Certainty Factor 1 (c1)

In the lowest level of certainty for oil and gas, "c1", no direct data are available to support or refute the occurrence of petroleum within the area, regardless of the level of geologic favorability. No wells have been drilled in or near the area, nor are any oil or gas seeps, tar sands, or oil-impregnated sandstone deposits known in the vicinity. Positive evidence of resource occurrence is far removed from the area, or is on a trend



considered unrelated to the geology of the area. Accordingly, the area will not be within an "established" or generally accepted "potential" petroliferous province.

#### Certainty Factor 2 (c2)

A lower-intermediate level of certainty, "c2", for oil and gas again implies that no direct data (seeps, exploratory wells, or producing wells) occur within or very near the area being evaluated. However, positive occurrence data must be available from the vicinity of the area; thus the area will probably be within a petroliferous province (basin) with at least one producing or formerly commercial oil and/or gas field. Seeps, shows, or productive wells that are present at some distance along a known productive trend are considered as stronger evidence for certainty than closer-in occurrences known to be off-trend. Thus, oil and gas shows as much as several miles away on-trend are better indications of certainty than those less than a mile distant but off-trend. Positive-occurrence data on parallel similar-type trends, although at some distance, are considered evidence for at least a "c2" certainty.

#### Certainty Factor 3 (c3)

The "c3", or higher-intermediate, degree of certainty for oil or gas requires the recognition of at least one seep, a show in an exploratory well, or a producing well from within or very near the area being evaluated. Moreover, the area will likely be within an established petroleum-producing province. If several wells have been drilled in or near the area, at least



one must have a strong show. A "c3" rating can also be used if the rating--team consensus deems that the extrapolation of nearby positive-direct data is stronger than for a "c2" certainty. (If a number of wells from within or near the area have been drilled and all were dry, a "c3" or "c4" certainty rating would be applied in conjunction with a low favorability.)

#### Certainty Factor 4 (c4)

The highest level of oil and gas certainty, "c4", is used only when the area being evaluated lies within a well-known, productive petroliferous province. Abundant and direct evidence such as seeps, shows, or producing wells occur within or immediately adjacent to the area. (By definition, when a "c4" certainty is used with an "f1" favorability, the dual rating indicates with a high-degree of certainty that commercial quantities of oil and gas do not occur in or near the area.)



# APPENDIX 5

## FORAGE ACTIONS BY ALTERNATIVES

### LEGEND

- L = Livestock Use Level  
 LA = Livestock Average Use  
 LP = Livestock Active Preference  
 WH = Wild Horse Use Level
- (a) The use level AUMs column includes decreases/increases from minerals and from active preference to average use (see Appendix 15).  
 (b) Wild horse use is summarized with Hill Creek herd in Hill Creek locality.  
 (c) Allotment is managed by Colorado through cooperative agreement.  
 (d) Since licensed use has been complete nonuse, allowable use would be 50% of active preference.

Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level	Management Actions	Use(a) Level	Management Actions	Use(a) Level	Management Actions	Use(a) Level	Management Actions
BLUE MOUNTAIN LOCALITY	LA 449	Continue AMP and grazing system. Note: 157 AUMs would continue on a temporary non-renewable (TNR) basis.	L 325	Reduce TNR* by 124 AUMs as follows: AUMs. reduce spring grazing by 49 AUMs to improve ecological condition and reduce competition with wildlife by 75 AUMs. Adjust AMP and grazing system to reflect change in spring use. Develop 2 reservoirs.	L 432	Reduce TNR by 17 Revise AMP and grazing system. Control burn or use chemical treatment on 1,100 acres. Develop 2 reservoirs.	L 449	Reduce TNR by 124 AUMs. Continue AMP and grazing system. Burn or use chemical treatment on 550 acres. Develop 2 reservoirs.
Blue Mountain AMP 5825	LP 292							
Cub Creek 5823	LA 54 LP 55	Season long use.	L 44	Reduce competition with L wildlife by 9 AUMs.	L 64	Season long use.	L 54	Season long use.
Doc's Valley 5821	LA 1,219	Season long use.	L 812	Reduce spring grazing by 203 AUMs to improve ecological condition. Reduce competition with wildlife by 204 AUMs.	L 1,661	Develop grazing system and AMP. Control burn or treat chemically 5,400 acres.	L 1,219	Develop grazing system and AMP. Burn or treat chemically 2,700 acres.
	LP 1,219							

\*Temporary nonrenewable



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level	Management Actions	Use(a) Level	Management Actions	Use(a) Level	Management Actions	Use(a) Level	Management Actions
	AUMs		AUMs		AUMs		AUMs	
Green River 5820	LA 1,304	Season long use.	L 288	Decrease spring grazing by 537 AUMs to improve ecological condition. Decrease competition with wildlife by 218 AUMs. Restrict livestock use on floodplains and riparian habitat by 150 AUMs. Develop 1 spring.	L 1,455	Season long use. Develop 1 spring.	L 1,408	Season long use. Develop 1 spring.
	LP 1,408							
Point of Pines 5822	LA 1,454	Season long use.	L 1,169	Reduce spring grazing by 143 AUMs to improve ecological condition. Reduce competition with wildlife by 138 AUMs. Develop 1 reservoir, build 1 mile of pipeline.	L 1,458	Develop grazing system and AMP. Control burn or chemically treat 2,925 acres. Develop 1 reservoir, develop 1 mile of pipeline.	L 1,458	Develop grazing system and AMP. Burn or chemically treat 2,250 acres. Develop 1 reservoir. Build 1 mile pipeline.
	LP 1,458							
Stuntz Valley 5824	LA 1,355	Season long use.	L 1,087	Reduce spring grazing by 136 AUMs to improve ecological condition. Reduce competition with wildlife by 132 AUMs. Develop 1 reservoir.	L 1,355	Develop grazing system and AMP. Control burn or treat chemically 2,200 acres.	L 1,355	Develop grazing system and AMP. Burn or chemically treat 1,660 acres. Develop 2 reservoirs.
	LP 1,355							



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
LOCALITY SUMMARY	LA 5,835	One grazing system and AMP. Five allotments with season long use.	L 3,725	Adjust grazing to average use by decreasing 109 AUMs. Reduce spring grazing by 1,068 AUMs on 5 allotments to improve ecological condition. Reduce competition with wildlife by 776 AUMs. Restrict livestock use on floodplains and riparian habitat by 150 AUMs. Develop 4 reservoirs. Develop 1 spring. Build 1 mile of pipeline. Adjust 1 AMP and grazing system to reflect change in spring use.	L 6,425	Revise 1 AMP and grazing system. Develop 3 AMPs and 3 grazing systems. Two allotments with season long use. Control burn or treat chemically 11,625 acres. Develop 3 reservoirs. Develop 1 spring. Build 1 mile pipeline.	L 5,943	Continue 1 AMP and grazing system. Develop 3 new AMPs and grazing systems. Two allotments with season long use. Control burn or treat chemically 7,160 acres. Develop 5 reservoirs. Develop 1 spring. Build 1 mile pipeline.
LP 5,787								

BONANZA-RAINBOW  
LOCALITY

Antelope Draw 5854	LA 3,194	Season long use. by 581 AUMs to improve ecological condition.	L 2,586	Reduce spring grazing. Develop AMP and grazing system. Develop 4 reservoirs. Maximize wild horse use.	L 5,800	Develop 4 reservoirs. Develop AMP and grazing system.	L 5,000	Develop 4 reservoirs.
	LP 5,800							
	WH 420	Present management.	WH 540		WH 0	Eliminate wild horse use.	WH 0	Eliminate wild horse use.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
Asphalt Draw AMP 8817	LA 2,662	Continue AMP and grazing system.	L 2,051	Develop 5 reservoirs. Adjust AMP and grazing system to reflect change in spring use. Reduce spring grazing by 532 AUMs to improve ecological condition.	L 4,483	Develop 15 reservoirs. Continue AMP and grazing system.	L 3,300	Develop 17 reservoirs. Continue AMP and grazing system.
	LP 4,343							
Badlands 5848	LA 741	Spring/fall use.	L 409	Develop 1 reservoir. Reduce spring grazing by 328 AUMs to improve ecological condition.	L 780	Develop 3 reservoirs.	L 780	Develop 3 reservoirs.
	LP 780					Spring/fall use.		Develop grazing system.
Baerer Wash 5832	LA 1,113	Season long use.	L 832	Reduce spring grazing by 275 AUMs to improve ecological condition.	L 1,254	Develop AMP and grazing system.	L 1,113	Develop AMP and grazing system.
	LP 1,254							
Bohemian Bottoms 5840	LA 617	Season long use.	L 576	Reduce spring grazing by 38 AUMs to improve ecological condition.	L 617	Develop 2 reservoirs. Season long use.	L 617	Develop 2 reservoirs. Season long use.
	LP 617							
Bonanza 5842	LA 1,827	Season long use.	L 1,462	Reduce spring grazing by 355 AUMs to improve ecological condition.	L 1,952	Develop AMP and grazing system.	L 1,827	Develop AMP and grazing system.
	LP 1,952							
Brewer 8831	LA 120	Season long use.	L 90	Reduce spring grazing by 30 AUMs to improve ecological condition.	L 122	Season long use.	L 120	Season long use.
	LP 120							
Cockleburr 5833	LA 1,167	Season long use.	L 843	Reduce competition with wildlife by 59 AUMs. Reduce spring grazing by 259 AUMs to improve ecological condition.	L 1,746	Develop AMP and grazing system.	L 1,546	Develop AMP and grazing system.
	LP 1,746							



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
Halfway Hill 5861	LA 558	Season long use.	L 462	Reduce spring grazing by 93 AUMs to improve ecological condition.	L 558	Develop AMP and grazing system.	L 558	Develop AMP and grazing system.
	LP 558							
Hells Hole 8819	LA 1,511	Season long use.	L 1,322	Develop 1 spring. Reduce spring grazing by 169 AUMs to improve ecological condition.	L 4,014	Develop 3 reservoirs. Develop 1 spring. Build 2.5 miles of fence. Season long use.	L 2,950	Develop 3 reservoirs. Develop 1 spring. Season long use.
	LP 4,014							
Jensen 5836	LA 689	Spring-fall use.	L 379	Reduce competition with wildlife by 115 AUMs. Develop 1 spring. Reduce spring grazing by 192 AUMs to improve ecological condition.	L 696	Develop 1 spring. Develop grazing system.	L 690	Develop 1 spring. Develop grazing system.
	LP 696							
K Ranch(c) 5849	LP 238	-	-	-	-	-	-	-
Kane Hollow 5837	LA 379	Spring-fall use.	L 357	Develop 1 reservoir. L Reduce spring grazing by 20 AUMs to improve ecological condition.	L 428	Develop 1 reservoir. Develop grazing system.	L 428	Develop 1 reservoir. Develop grazing system.
	LP 428							
Little Emma 5852	LA 3,536	Season long use.	L 2,733	Develop 3 reservoirs. L Reduce spring grazing by 707 AUMs to improve ecological condition.	L 4,545	Develop 5 reservoirs. Season long use.	L 3,536	Develop 5 reservoirs. Season long use.
	LP 4,545							
Miners Gulch 5838	LA 100	Season long use.	L 32	Reduce competition with wildlife by 17 AUMs. Reduce spring grazing by 50 AUMs to improve ecological condition.	L 154	Season long use.	L 100	Season long use.
	LP 154							



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
Olson AMP 8816	LA 3,344	Continue AMP and grazing system.	L 2,408	Adjust AMP and grazing system to reflect change in spring use. Reduce spring grazing by 809 AUMs to improve ecological condition.	L 9,534	Continue AMP and grazing system.	L 4,500	Continue AMP and grazing system.
	LP 9,208							
Powder Wash 5857	LA 1,905	Season long use.	L 1,473	Reduce competition with wildlife by 64 AUMs. Develop 1 reservoir. Reduce spring grazing by 358 AUMs to improve ecological condition.	L 2,100	Develop 3 reservoirs. Develop AMP and grazing system.	L 2,100	Develop 3 reservoirs. Develop AMP and grazing system.
	LP 2,100							
Raven Ridge 5851	LA 1,038	Season long use.	L 825	Reduce spring grazing by 208 AUMs to improve ecological condition.	L 1,175	Control burn or spray 1,000 acres. Season long use.	L 1,101	Control burn or spray 1,000 acres. Season long use.
	LP 1,112							
Sand Wash 8818	LA 1,858	Season long use.	L 1,513	Reduce spring grazing by 310 AUMs to improve ecological condition.	L 7,134	Season long use.	L 1,858	Season long use.
	LP 7,025							
Seven Sisters AMP 5845	LA 1,123	Continue AMP and grazing system.	L 1,012	Adjust AMP and grazing system to reflect change in season of use and wild horse use. Reduce spring grazing by 102 AUMs to improve ecological condition.	L 1,920	Continue AMP and grazing system.	L 1,123	Continue AMP and grazing system.
	LP 1,920							
	WH 60	Present management.	WH 60	Maximize wild horse use.	WH 0	Eliminate wild horse use.	WH 0	Eliminate wild horse use.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
Snake John 5860	LA 1,013 LP 1,164	Season long use.	L 811	Reduce spring grazing by 196 AUMs to improve ecological condition.	L 1,164	Develop AMP and grazing system.	L 1,164	Develop AMP and grazing system.
Spring Hollow 5862	LA 444 LP 444	Spring-fall use.	L 306	Develop 1 reservoir. Reduce spring grazing by 136 AUMs to improve ecological condition.	L 444	Develop 3 reservoirs. Spring-fall use.	L 444	Develop 3 reservoirs. Develop grazing system.
Stateline 5863	LA 1,245 LP 2,516	Season long use.	L 1,057	Reduce spring grazing by 175 AUMs to improve ecological condition.	L 2,516	Season long use.	L 1,771	Season long use.
Stirrup AMP 5847 386	LA 413 LP 413	Continue AMP and grazing system.	L 336	Adjust AMP and grazing to reflect change in spring use. Reduce spring grazing by 75 AUMs to improve ecological condition.	L 413	Continue AMP and grazing system.	L 413	Evaluate and revise AMP and grazing system and season of use.
Sunday School Canyon AMP 8814	LA 2,998 LP 3,777	Continue AMP and grazing system.	L 2,559	Develop 1 guzzler. Adjust AMP and grazing system to reflect change in spring use. Reduce spring grazing by 427 AUMs to improve ecological condition.	L 3,799	Develop 3 guzzlers. Build 1/4 mile of pipeline. Evaluate and revise AMP and grazing system to account for additional waters.	L 3,777	Develop 6 guzzlers. Build 1/4 mile of pipeline. Evaluate and revise AMP and grazing system to account for additional waters.
Walker Hollow AMP 5839	LA 735 LP 767	Continue AMP and grazing system.	L 731	Develop 1 spring. Build 1/2 miles of fence. Continue AMP and grazing system.	L 767	Develop 2 reservoirs. Develop 1 spring. Build 1/2 mile fence. Revise AMP and grazing system to account for additional water and fence.	L 767	Develop 2 reservoirs. Develop 1 spring. Build 1/2 mile fence. Revise AMP and grazing system to account for additional waters and fence.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
Watson 8815	LA 1,258	Season long use.	L 1,035	Develop 1 reservoir. Reduce spring grazing by 210 AUMs to improve ecological condition.	L 1,299	Develop 3 reservoirs. Season long use.	L <u>1,258</u>	Develop 3 reservoirs. Season long use.
	LP 1,258							
West Deadman 5841	LA 1,095	Season long use.	L 889	Reduce spring grazing by 197 AUMs to improve ecological condition.	L 1,942	Season long use.	L <u>1,739</u>	Season long use.
	LP 1,942							
White River 8829	LA 190	Season long use.	L 189	Season long use.	L 190	Season long use.	L 189	Season long use.
	LP 190							
White River Bottoms 5850	LA 479	Season long use.	L 0	Restrict livestock from entire allotment to protect riparian habitat and flood- plains.	L 480	Season long use.	L <u>480</u>	Season long use.
	LP 480							



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
LOCALITY	LA 37,352	Continue season long use on 19 allotments.	L 29,277	Reduction of livestock preference to average use = 24,209 AUMs (this includes 600 AUMs for wild horse use and 1,390 AUMs for antelope). Decrease 255 AUMs for wildlife in herd unit 26. Decrease <u>6,832</u> AUMs of spring use to improve ecological condition. Decrease 479 AUMs to protect riparian habitat and 100-year floodplains. Reduce 509 AUMs from mineral impacts to livestock. Develop 17 reservoirs and 3 springs. Build 1 guzzler and 1/2 mile of fence. Adjust 5 AMPs and grazing systems to reflect the above changes. Continue 1 AMP and grazing system. One allotment managed by Colorado.	L 62,026	Develop 41 reservoirs. Develop 3 springs. Build 3 miles of fence. Build 3 guzzlers. Build 1/4 mile of pipeline. Control burn or chemically treat 1,000 acres. Develop 7 AMPs and grazing systems. Develop 2 grazing systems. Continue 4 AMPs and grazing systems. Evaluate and revise 2 AMPs and grazing systems. One allotment managed by Colorado.	L 45,249	Develop 46 reservoirs. Develop 3 springs. Build 6 guzzlers. Build 1/2 mile of fence. Build 1/4 mile of pipeline. Control burn or spray 1,000 acres. Develop 7 AMPs. Develop 11 grazing systems. Continue 4 AMPs and grazing systems. Evaluate and revise 2 AMPs and grazing systems. One allotment managed by Colorado.
SUMMARY	LP 61,323	Present management	WH 600	Maximize wild horse use on 2 allotments.	WH 0	Eliminate wild horse use on 2 allotments.	WH 0	Eliminate wild horse use on 2 allotments.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
BOOK CLIFFS LOCALITY								
Atchee Ridge AMP 8824	LA 7,074 grazing system.	Continue AMP and grazing system.	L 6,465	Reduce spring grazing by 590 AUMs. To improve ecological condition. Develop 6 springs. Build 2 guzzlers. Control burn 5,300 acres. Adjust AMPs and grazing system to allow for changes listed above.	L 11,749	Develop 10 springs. Build 7 guzzlers. Build 15 miles of fence. Control burn 4,200 acres. Chain 1,400 acres. Revise AMP and grazing system to reflect additional develop- ments.	L 9,447	Develop 11 springs. Build 10 guzzlers. Build 15 miles of fence. Control burn 5,000 acres. Revise AMP and grazing system to reflect additional developments.
	LP 9,447							
389 Book Cliff Pastures 8828	LA 300 LP 301	Season long use.	L 299	Season long use.	L 301	Season long use.	L 300	Season long use.
Davis Canyon(c) 8823	LA - LP 334	-	-	-	-	-	-	-
Horse Point(b) AMP 8825	LA 1,398 LP 1,398	Continue AMP and grazing system.	L 1,206	Develop 2 reservoirs. Build 2 miles of fence. Control burn 2,000 acres. Clear cut 300 acres. Adjust AMP and grazing system to allow for changes listed above. Reduce spring grazing by 231 AUMs to improve ecological condition.	L 3,342	Build 3 guzzlers. Develop 3 reservoirs. Build 1 mile of fence. Control burn 2,900 acres. Revise AMP and grazing system to reflect additional developments.	L 2,346	Build 3 guzzlers. Develop 3 reservoirs. Build 1 mile of fence. Control burn or spray 2,000 acres. Revise AMP and grazing system to reflect additional developments.
	LP 2,346 WH 171	Present management. use.	WH 171	Maximize wild horse	WH 171	Year long use.	WH 171	Maximize wild horse use.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
McClelland 8826	LA 1,226	Season long use.	L 1,023	Season long use. Reduce spring grazing by 196 AUMs to improve ecological condition.	L 1,399	Season long use.	L 1,226	Season long use.
	LP 1,399							
Sweetwater AMP 8822	LA 5,822	Continue AMP and grazing system.	L 5,226	Restrict livestock use on 210 acres (18 AUMs) of floodplains and riparian habitat. Restrict livestock use on critical wild- life habitat by 751 AUMs. Develop 2 springs. Build 2 guzzlers. Develop 2 reservoirs. Build 6 miles of fence for floodplain and riparian habitat protection. Build 2 miles of pipeline. Control burn 8,000 acres. Clear cut 300 acres. Adjust AMP and grazing system to allow for changes listed above.	L 8,815	Develop 2 springs. Develop 2 reservoirs. Build 3 guzzlers. Build 2 miles of pipe- line. Control burn 4,500 acres. Clear cut 300 acres. Revise AMP and grazing system to reflect additional development.	L <u>7,276</u>	Develop 2 springs. Develop 2 reservoirs. Build 8 guzzlers. Build 2 miles of pipeline. Control burn 2,000 acres. Clear cut 300 acres. Revise AMP and grazing system to reflect additional developments. Restrict livestock from 210 acres (18 AUMs) of floodplains and riparian habitat.
	LP 7,276							
Westwater Point 8833	LA 349	Season long use.	L 347	Build 1 guzzler. Reduce spring grazing by 330 AUMs to improve ecological condition.	L 426	Build 1 guzzler. Season long use.	L 349	Build 1 guzzler. Season long use.
	LP 426							



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level	Management Actions	Use(a) Level	Management Actions	Use(a) Level	Management Actions	Use(a) Level	Management Actions
Winter Ridge AMP 8827	LA 1,182	Continue AMP and grazing system.	L 848	Develop 3 reservoirs. Develop 2 springs. Control burn 100 acres. Adjust AMP and grazing system to allow for changes listed above.	L 2,353	Control burn or spray 1,200 acres. Revise AMP and grazing system to reflect additional developments.	L 1,193	Develop 3 reservoirs. Develop 2 springs. Control burn or spray 1,200 acres. Revise AMP and grazing system to reflect additional developments.
	LP 1,979 WH 108	Present management.	WH 0	Eliminate wild horse use.	WH 0	Eliminate wild horse use.	WH 0	Eliminate wild horse use.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
LOCALITY SUMMARY	LA 17,351	Season long use = 3 allotments. AMPs and rotation grazing systems = 4 allotments. One allotment managed by Colorado.	L 15,412	Reduce spring grazing by 1,347 AUMs on 4 allotments to improve ecological condition. Restrict livestock on floodplains and riparian habitat by 18 AUMs. Restrict livestock on critical wildlife habitat by 751 AUMs. Develop 10 springs. Develop 7 reservoirs. Build 5 guzzlers. Build 2 miles of fence for livestock. Build 6 miles of fence to protect riparian habitat and floodplains. Build 2 miles of pipeline. Control burn 15,400 acres. Clear cut 600 acres. Adjust 4 AMPs and grazing systems to allow for changes listed.	L 28,385	Develop 12 springs. Develop 5 reservoirs. Build 14 guzzlers. Build 16 miles of fence. Build 2 miles of pipeline. Control burn 11,600 acres. Control burn or chemically treat 1,200 acres. Clear cut 300 acres. Chain 1,400 acres. Revise 4 AMPs and grazing systems to reflect developments. Season long use = 3 allotments.	L 22,137	Develop 16 springs. Develop 8 reservoirs. Build 22 guzzlers. Build 16 miles of fence. Build 2 miles of pipeline. Control burn 7,000 acres. Control burn or chemically treat 3,200 acres. Clear cut 300 acres. Revise 4 AMPs and grazing systems to reflect developments. Season long use on 3 allotments.
P 23,174	Present management		WH 0	Eliminate wild horse	WH 0	Eliminate wild horse	WH 0	Eliminate wild horse
WH 108	on one allotment.			use on 1 allotment.		use on 1 allotment.		use on 1 allotment.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
HILL CREEK LOCALITY								
Birchell 8804	LA 85	Season long use.	L 0	Restrict livestock from entire allotment to protect riparian habitat and floodplain.	L 93	Control burn 100 acres. Develop AMP and grazing system.	L 85	Control burn 100 acres. Develop AMP and grazing system.
	LP 85							
Green River AMP 8803	LA 436	Continue AMP and grazing system.	L 0	Restrict livestock from entire allotment to protect riparian habitat and floodplains.	L 437	Continue AMP.	L 437	Continue AMP. Restrict livestock from 260 acres to protect 100-year floodplain and riparian habitat.
	LP 437							
Hatch-Broome- Bartholomew 8805	LA 107	Season long use.	L 53	Reduce spring grazing by 54 AUMs to improve watershed and ecological condition.	L 107	Season long use.	L 107	Season long use.
	LP 107		L 53					
Lower Shawalter (wild horse Bench) 8811	LA 50	Season long use.	L 43	Season long use.	L 1,508	Season long use.	L 50	Season long use.
	LP 1,508							
	WH 84	Present management.	WH 180	Maximize wild horse use.	WH 0	Reduce wild horse use.	WH 180	Maximize wild horse use.
Oil Shale 8813	LA 0(d)	Season long use.	L 0(d)	Season long use.	L 1,098	Build 1 guzzler. Season long use.	L 1,098	Build 1 guzzler. Season long use.
	LP 1,098							
	WH 90	Present management.	WH 90	Present wild horse use.	WH 0	Reduce wild horse use.	WH 180	Maximize wild horse use.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
Pack Mountain- Wild Horse 8808	LA 1,328	Season long use.	L 1,187	Develop 2 reservoirs. Reduce spring grazing by 133 AUMs to improve ecological condition.	L 1,775	Develop 6 reservoirs. Build 1 guzzler. Season long use.	L 1,775	Develop 6 reservoirs. Build 1 guzzler. Season long use.
	LP 1,775							
	WH 120	Present management.	WH 120	Maximize wild horse use.	WH 0	Reduce wild horse use.	WH 120	Maximize wild horse use.
Santio Sibello 8806	LA 96	Season long use.	L 80	Reduce spring grazing by 16 AUMs to improve ecological condition.	L 96	Build 1.5 miles of fence. Season long use.	L 96	Build 1.5 miles of fence. Season long use.
	LP 96							
	LA 1,997	Season long use.	L 1,792	Develop 1 reservoir. Reduce spring grazing by 200 AUMs to improve ecological condition.	L 2,995	Develop 2 reservoirs. Build 2 guzzlers. Control burn 600 acres. Season long use.	L 1,997	Develop 2 reservoirs. Build 2 guzzlers. Season long use.
Tabyago 8801 394	LP 2,995							
	WH 540	Present management.	WH 660	Maximize wild horse use.	WH 140	Reduce wild horse use.	WH 660	Maximize wild horse use.
	LA 248	Season long use.	L 123	Reduce spring grazing by 124 AUMs to improve ecological condition.	L 248	Season long use.	L 247	Season long use.
Thorne-Ute- Broome 8812	LP 248							
	LA 133	Season long use.	L 66	Reduce spring grazing by 67 AUMs to improve ecological condition.	L 398	Control burn or spray 1,100 acres. Season long use.	L 133	Control burn or spray 500 acres. Season long use.
	LP 398							
Upper Showalter (Mustange) 8810	WH 120	Present management.	WH 180	Maximize wild horse use.	WH 117	Reduce wild horse use.	WH 180	Maximize wild horse use.
	LA 488	Season long use.	L 400	Reduce spring grazing by 81 AUMs to improve ecological condition.	L 1,474	Control burn or spray 500 acres. Season long use.	L 488	Season long use.
	LP 1,464							
Ute 8809	WH 96	Present management.	WH 216	Maximize wild horse use.	WH 24	Reduce wild horse use.	WH 216	Maximize wild horse use.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level	Management Actions	Use(a) Level	Management Actions	Use(a) Level	Management Actions	Use(a) Level	Management Actions
West Tabyago AMP 8807	LA 1,474	Continue present AMP and grazing system.	L 1,308	Reduce spring grazing by 164 AUMs to improve ecological condition.	L 2,420	Control burn 1,500 acres. Evaluate and revise AMP to account for wild horse use and land treatment.	L 1,474	Evaluate and revise AMP to account for wild horse use.
	LP 2,420							
	WH 660	Present management.	WH 720	Maximize wild horse use.	WH 258	Reduce wild horse use.	WH 720	Maximize wild horse use.
LOCALITY SUMMARY	LA 6,442	Continue season long use on 10 allotments. Continue AMPs and grazing systems on 2 allotments.	L 5,045	Reduce spring grazing by 839 AUMs on 8 allotments to improve ecological condition. Restrict livestock from 2 allotments to protect riparian habitat and flood- plains. Develop 3 reservoirs.	L 12,649	Develop 8 reservoirs. Build 4 guzzlers. Build 1.5 miles of fence. Control burn 2,200 acres. Control burn or <u>chemically</u> <u>treat</u> 1,600 acres. Develop 1 AMP. Evaluate and revise 1 AMP to account for wild horse use. Continue 1 AMP. Continue season long use on 9 allotments.	L <u>7,987</u>	Develop 8 reservoirs. Build 4 guzzlers. Build 1.5 miles of fence. Control burn or <u>chemically treat</u> 600 acres. Evaluate and revise 1 AMP to account for wild horse use. Develop 1 AMP. Continue 1 AMP. Continue season long use on 9 allotments.
	LP 12,631							
	WH 1,881	Present management for wild horses on 8 allotments.	WH 2,340	Wild horse use would be maximized on 8 allotments.	WH 710	Reduced wild horse use on 7 allotments. Present use on 1 allotment.	WH 2,340	Maximize wild horse use on 8 allotments.



Allotment Name Allotment Num.	Current Management		Resource Protection		Commodity Production		Balanced Use	
	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions	Use(a) Level AUMs	Management Actions
RESOURCE AREA SUMMARY	LA 66,980 LP 102,915	Continue 13 AWP's and 415 grazing systems. Continue present grazing levels on 41 allotments.	L 53,459 L 10,086	Reduce spring grazing on 44 allotments amounting to 10,086 AUMs to improve ecological condition. Revise 10 AWP's to reflect changes in spring grazing. Reduce competition with wildlife on 10 allotments resulting in 1,031 AUMs in herd unit 26. Restrict livestock on 14,924 acres amounting to 1,168 AUMs of riparian habitat and floodplains. Restrict livestock from 14,000 acres of critical wildlife habitat amounting to 751 AUMs. Develop 14 springs. Develop 31 reservoirs. Build 6 guzzlers. Build 10 miles of fence. Build 3 miles of pipeline. Control burn 15,400 acres. Clear cut 600 acres.	L 109,485 L 10,086	Develop 11 AWP's with 2 additional grazing systems. Continue 6 AWP's and revise 7. Continue present management on 8 allotments. Develop 16 springs. Develop 62 reservoirs. Build 21 guzzlers. Build 18 miles of fence. Build 4 miles of pipeline. Control burn 13,000 acres. Spray or control burn 6,300 acres. Chain 1,400 acres. Clear cut 300 acres.	L 81,316 L 10,086	Develop 11 AWP's and 4 additional grazing systems to defer spring grazing. Continue 6 AWP's and grazing systems. Revise 7 AWP's and grazing systems to defer or rest spring grazing. Continue present management on 26 allotments. Develop 20 springs. Develop 66 reservoirs. Build 32 guzzlers. Build 18 miles of fence. Build 3 miles of pipeline. Control burn 8,050 acres. Spray or control burn 10,900 acres. Clear cut 300 acres. Restrict livestock from 470 acres of riparian habitat and floodplain.
	WH 2,469	Present management for wild horses on 11 allotments.	WH 2,337	Maximize wild horse use on 10 allotments. Eliminate wild horse use on 1 allotment.	WH 710	Reduce wild horse use on 7 allotments. Eliminate wild horse use on 3 allotments. Continue present wild horse use on 1 allotment.	WH 2,340	Maximize wild horse use on 8 allotments. Eliminate wild horse use on 3 allotments.



# APPENDIX 6

## CAMPSITES IDENTIFIED IN PREVIOUS YEARS FOR POSSIBLE DEVELOPMENT

Name	Location - Size	Features	Present Status	Future Potential
Hide Out Campground	T14S, R23E, Sec. 30 SW $\frac{1}{4}$ SE $\frac{1}{4}$ ; Size: 40 Acres	Adjacent to Seep Ridge Road and about 1 mile south of Pine Springs Canyon turnout. Canyon head, ponderosa pine provides shade, terrain-relatively level, no water.	Ponderosa stand partially cut around 1960 but sufficient number of trees remain to provide adequate shade & screening.	Easy access from Seep Ridge Road. Presently used by hunters for camping.
Seep Ridge Hunter Camp	T15S, R22E, Sec. 8 NE $\frac{1}{4}$ SE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ Size: 60 Acres	Located on flat ground contiguous to the Seep Ridge Road. Past use has been deer hunters that camp under mature pinyon trees.	Gas well drilled in 1981 on the northern half of the camp area. Road built through area to access other gas wells. Dusty. Lack of privacy.	Aesthetic value of the area has been nearly ruined. Seldom used today by hunters.
Meadow Ridge	T15S, R23E, Sec. 21 S $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ , Sec. 28 NE $\frac{1}{4}$ NW $\frac{1}{4}$ ; Size: 60 Acres	Located at the head of a canyon. Vegetated by a stand of Douglas fir. No water. Terrain-undulating.	Access road to this area has been upgraded to a gas well service road. Road has been extended and passes thru the center of the unit.	Future potential for development is low to moderate. Road construction has removed many of the key shade trees. Feeling of solitude reduced by the presence of the road.



# Appendix 6 (Continued)

Name	Location - Size	Features	Present Status	Future Potential
Aspen Hollow	T16S, R24E, Sec. 3 E $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ Size: 20 Acres	Located at the head of South Canyon in a small grove of aspen trees. Site accommodates only one camping unit without major dirt work. Terrain is steep.	Mountain Fuel natural gas line built through the southern edge of the unit in the late 60's.	Expensive to develop because terrain is relatively steep. Historically, site is occupied during the hunting season by one party. Future potential-mod-erate.
Chicken Spring	T15 $\frac{1}{2}$ S, R24E, Sec. 34 NW $\frac{1}{4}$ SE $\frac{1}{4}$ , E $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$ Size: 100 Acres	One of the best areas in South Canyon to camp. Popular area for hunters. No improvements have been made to the site.	Some aspen trees have been killed due to abuse by campers. Erosion a small problem as a result of silt washing off road into the area. Area on the west side of the road may not be suited or needed for development.	Development potential moderately high. Problems: dust from South Canyon road drifts into area, no water available, cattle graze this area hard in the summer.
South Canyon Hunter Camp	T15S, R24E, Sec. 28 E $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ Size: 40 Acres	Located about one mile down canyon from BLM's administrative camp located in South Canyon. A few aspen trees are present.	Trench about ten feet deep eroded in the bottom of the canyon and divides the site in two. Can be dusty from road traffic.	In the past seven years, it has not proved to be a popular place to camp. Close to PR



Appendix 6 (Continued)

Name	Location - Size	Features	Present Status	Future Potential
Lower McCook Hunter Camp	T14S, R24E, Sec. 4 SE $\frac{1}{4}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ Size: 70 Acres	Located on top of a large flat ridge on Lower McCook. No water. Vegetation is pinyon-juniper and sagebrush.	In the mid 1960's, this area was chained. Only a few trees on sloping terrain remain.	Lack of shade & chaining has destroyed the aesthetic appeal of the site.
Flat Rock Hunter Camp (Massey Junction)	T13S, R25E Sec. 5 SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 8 NE $\frac{1}{4}$ NW $\frac{1}{4}$ Size: 80 Acres	Located on Atchee Ridge at Massey Junction. Mature stand of pinyon-juniper.	Area being used as an administrative site by BLM and Division of Wildlife Resources. Cabin was built by DWR in 1976. BLM maintains a trailer at the site.	Has proven to be a good administrative site. Limited demand by the public to camp here.
Atchee Ridge	T13S, R25E, Sec. 27 SE $\frac{1}{4}$ NE $\frac{1}{4}$ Size: 40 Acres	Located on Atchee Ridge adjacent to the road and one mile south on the Indian Spring Ridge turnout. The site is situated on a ridge top with the terrain sloping away on three sides. Mature pinyon and junipers present.	No site deterioration since the area was inventoried in the 1960's. Hunters still camp in the area.	No other areas reserved along the Atchee road. However, there are many good opportunities for dispersed camping on the many side roads.
Winter Ridge	T15S, R22E, Sec. 33 NW $\frac{1}{4}$ SW $\frac{1}{4}$ Size: 40 Acres		Area reviewed by the Area Manager and dropped from protective status on 10/21/81.	



Appendix 6 (Continued)

Name	Location - Size	Features	Present Status	Future Potential
Willow Canyon Hunter Camp	T16S, R24E, Sec. 4 NE $\frac{1}{4}$ NE $\frac{1}{4}$ T15 $\frac{1}{2}$ S, R24E, Sec. 33 S $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ Size: 60 Acres	Located at the top of the Book Cliffs Mountains at the head of Willow Canyon. No water present other than a stock pond. Two-acre stand of aspen trees in the unit. Slopes north facing. Terrain moderately steep.	Mountain Fuel natural gas pipeline buried across the southern edge of the unit. Stock pond built in the middle of the unit is heavily used by cows. This camp is located within one mile of PR Spring.	Little potential for future development. Unit competes with PR Spring and South Canyon for camping use. The soil on the north slope is slow to dry.
PR Spring	T15S, R23E, Sec. 36 SE $\frac{1}{4}$ SE $\frac{1}{4}$ T15S, R24E, Sec. 31 SW $\frac{1}{4}$ SW $\frac{1}{4}$ Size: 80 Acres	Only recreation site available on public land with a dependable supply of water. Site very popular for both camping & culinary water. Remnant of old CCC camp still present.	Spring redeveloped in 1979. Fence and cattle guard installed in 1982.	Water source dependable and of excellent quality. Good access road. Good future potential for rest area, water site & picnic area. Lack of adequate space makes site less desirable for a campground.



Appendix 6 (Continued)

Name	Location - Size	Features	Present Status	Future Potential
Book Cliffs Rim Hunter Camp	T16S, R25E, Sec. 5 SW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 6 S $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ Size: 60 Acres	Located on a high ridge top overlooking the Book Cliffs to the south and north. No water available. Douglas fir over- story with mountain mahogany and grasses underneath. Con- tiguous to Book Cliffs divide road.	Trampling of vegetation & soil compaction has caused site deterioration. Site Tree roots exposed. Has received heavy use in past years but recently due to increased traffic & dust, it has lost some popularity.	Spring, Aspen & Chicken Spring Camp Areas. Trees pro- vide good shade. Site can be very dusty from road traffic. Room for development of additional sites limited. Moderately high future potential.
Lee Canyon Hunter Camp	T15S, R26E Sec. 18 Lot No. 4 Sec. 19 Lot No. 1 Size: 105 Acres	Located at the bottom of a small deep can- yon, Lee Canyon.	BLM developed the spring in 1981 for livestock use. Small aspen grove. Seldom used by campers. Road has been eroded away. Conflicts with cattle grazing and preservation of good wildlife habitat.	Site is some- what isolated and not known by most hunt- ers. Low future poten- tial.



Appendix 6 (Continued)

Name	Location - Size	Features	Present Status	Future Potential
Point of Pines Hunter Camp	T5S, R25E, Sec. 22 SW $\frac{1}{4}$ NW $\frac{1}{4}$ Size: 40 Acres	Scattered ponderosa pine. Terrain relatively flat. No water available.	Forest fire burned to the edge of the site in 1974. Access or con- ditions of the site has not changed since it was originally in- ventoried.	Site duplica- tes Point of Pines Over- look. Tra- ditionally, hunters camp in the vicinity of the small pond and not at this site.



# APPENDIX 7

## SCENIC OVERLOOKS AND GEOLOGIC FEATURES

Name	Location - Size	Features	Present Status	Future Potential
Point of Pines Picnic Site and Scenic Overlook	T5S, R25E, Sec. 20 S $\frac{1}{2}$ ; Size: 320 Acres	Located on top of Blue Mountain near the edge of a 2000 foot cliff. Terrain relatively flat and soils sandy. No water. Site contains a small pond which dries up in the summer. Vegetation is ponderosa pine, aspen and an understory of manzanita. Excellent view on the eastern edge of the Uintah Basin.	Forest fire burned & killed much of the vegetation along the rim of Blue Mountain. However, most of this site was spared from the fire.  Mainly used by hunters and sightseers.	This site can be improved by adding the NW, Sec. 29, T5S, R25E. High quality site with future potential.
Doc's Valley Picnic Site and Scenic Overlook	T4S, R25E, Sec. 30 S $\frac{1}{2}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$ ; Sec. 31 N $\frac{1}{2}$ NE $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$ Size: 240 Acres	Located on Blue Mountain between Doc's Valley and Daniels Canyon. No water available. Vegetation: Scattered ponderosa pine, pinyon and juniper with sagebrush understory.	Portion of Doc's Valley sprayed to kill the sagebrush and enhance the growth of grass. Deer hunters camp in this area. A small stock pond has been built on the southeast corner of the site.	The area is remote. Though the area is scenic and topographically interesting, it is seldom used by picknickers or sightseers. Panorama view is not outstanding when compared to Point of Pines.



Appendix 7 (Continued)

Name	Location - Size	Features	Present Status	Future Potential
Willow Creek Overlook	T11S, R21E, Sec. 19 SE $\frac{1}{4}$ SE $\frac{1}{4}$ ; Sec. 20 W $\frac{1}{2}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ ; Sec. 30 E $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ Size: 80 Acres	Breathtaking view of Willow Creek drainage, Big Pack & Little Pack Mountains.	Site is located approximately $\frac{1}{2}$ mile north from the presently used overlook area. MFP recommendation has been approved allowing no incompatible uses or improvements on or adjacent to the overlook.	If the Sheep Ridge road should be up-graded to an all-weather highway, this site could become increasingly important to the recreational experience of those travelling the area. This overlook typifies the little known beauty of this area to sightseers.
Grand Valley Overlook	T15S, R25E, Sec. 26 SE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ , NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ Size: 40 Acres	An excellent panoramic view of the Grand Valley of Colorado looking towards Grand Junction.	Loop road constructed to Observation Point. No sign marking the turnout.	Excellent view. Visitor use is low because of low volume of road traffic. No present conflicts with other land uses.



# Appendix 7 (Continued)

Name	Location - Size	Features	Present Status	Future Potential
Musket Shot Spring Interpretive Facility	Seven miles east of Jensen on Highway 40. T6S, R24E, Sec. 9 SW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ Size: 10 Acres	<ol style="list-style-type: none"> <li>1. Parking area plus barriers for 6 cars.</li> <li>2. Four large interpretive signs dealing with Dominquez/Escalante expedition and geology of Blue Mountain.</li> <li>Signs located under a 8x10 wood ramada.</li> <li>3. Two advance notice signs one mile prior to the pull off.</li> <li>4. This site was constructed as a part of the bicentennial celebration and commemorates a segment of the Escalante Trail created by the Spanish Missionaries Dominquez &amp; Escalante in September 1776.</li> </ol>	<p>Site operated since 1976</p> <p>Problems encountered:</p> <ol style="list-style-type: none"> <li>1. No gates to close the area during the winter months.</li> <li>2. Vandalism of the signs.</li> <li>3. Pull through road is not paved.</li> <li>4. People dump trash at site.</li> <li>5. No sanitation facilities.</li> <li>6. Annual maintenance required - <math>\frac{1}{2}</math> work month.</li> </ol>	<p>Potential for future development is low.</p> <p>Benefits of the site:</p> <ol style="list-style-type: none"> <li>1. Convenient pull off from a transcontinental highway.</li> <li>2. High percentage of out-of-state users during tourist season.</li> <li>3. Excellent view of the face of Blue Mountain.</li> <li>4. Has high future potential.</li> <li>5. Has high value for interpretive displays.</li> </ol>



# Appendix 7 (Continued)

Name	Location - Size	Features	Present Status	Future Potential
Split Mountain Overlook	T4S, R25E, Sec. 20 SW $\frac{1}{4}$ NW $\frac{1}{4}$ Size: 40 Acres	Located on Blue Mountain, one mile north of Doc's Valley. View into Split Mountain Canyon. Poor access via a rocky, dirt road.	No change since the area was inventoried in the 1960's.	Overlook is in a remote, out-of-the-way location. It is seldom visited. Better views of Split Mountain Canyon are available from inside Dinosaur National Monument from the Yampa Plateau, two miles to the west.
Fantasy Canyon Geologic Feature	T9S, R22E, Sec. 12 E $\frac{1}{2}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$ Size: 60 Acres	Located adjacent to Coyote Wash. Contains unique geological and erosional feature.	Not protected against mineral entry. Erosion features are very fragile and subject to vandalism.	A unique area with high development potential.
Duck Rock	T10S, R24E, Sec. 12 NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ Size: 10 Acres	It is a rock in the shape of a duck and has become a local land mark.	Not protected against mineral entry or other type of development.	Adjacent to paved road. Has unique shape. Can be protected from degradation and has recreation potential for preservation.



# **APPENDIX 8**

## **MITIGATING MEASURES FOR LAND TREATMENTS WATER DEVELOPMENTS, AND MANAGEMENT FACILITIES**

### **Prescribed Burns**

The pattern of vegetation modification would be designed to blend into the landscape to maintain the natural appearance of the area and minimize impacts to the visual resources.

Soil moisture and the season of the burn would be selected to benefit the survival of desired species.

Fire lines and breaks would be built in conformance with the district fire plan. Following treatment, fire lines would be rehabilitated, berms smoothed, disturbed areas reseeded, etc. as necessary to conform to the original conformation of the site.

Burning would be conducted in such a manner as to allow convection to vent smoke and provide the most complete combustion of material, thus restricting air pollution.

In order to protect known cultural values and threatened, endangered, and sensitive plant and animal species, a clearance would be required prior to burning.

The need for buffer zones to protect critical wildlife habitat would be coordinated with the UDWR.

Care will be taken to locate and protect all legal markers including cadastral, property, and claim markers.

Protection of the watershed would be considered to protect the loss of soil. Gully plugging, reseeded, and other watershed preserving practices would be applied when warranted.

Deferment of livestock grazing for periods of one to three years would be required. Temporary fencing would be used to protect certain sites.

### **Chemical Treatment**

Projects would conform to State and Environmental Protection Agency (EPA) pollution standards. Application of chemicals would conform to EPA regulations and BLM requirements.

The patterns of the vegetation modification would be designed to blend into the landscape to maintain the natural appearance of the area.



## Appendix 8 (Continued)

In order to control drift, chemical sprays would be applied only when winds are less than 5 miles per hour.

The need for and proper dimensions of buffer zones to protect wildlife habitat would be jointly agreed upon by the BLM and UDWR.

Chemically treated vegetation would be left in place, with the exception of woodland products, which could be profitably harvested.

Season of treatment and soil moisture would be selected to give the best kill to target species and preserve desired species.

In order to protect known cultural values, threatened, endangered, and sensitive plant and animal species, a clearance would be required prior to treatment.

Visual resources would be considered in the development of the treatment area.

Care would be taken to locate and protect all legal markers including cadastral, property, and claim markers.

Cooperation with the range user would be maintained to protect treated areas from grazing following treatment. Deferments in grazing would generally be one to three growing seasons. Where grazing systems with rest periods in the grazing cycle are being followed, treatments and deferment of use would be worked in with the normal rest periods in the grazing cycle.

### Chainings

The patterns of the vegetation modification would be designed to blend into the landscape to maintain the natural appearance of the area. Irregular patterns would be implemented to increase the edge effect.

Areas within 200 feet of well-traveled roads would not be chained.

Steep drainages (over 30 percent slope) would not be chained.

The need for and proper dimensions of buffer zones would be jointly agreed to by BLM and the Utah Division of Wildlife Resources (UDWR) prior to on-the-ground development of projects. Buffer zones would be provided, where necessary, to prevent disturbance to riparian ecosystem.

Vegetation would be left in place. Permits would be given for salvage of woodland products following treatment.

Seed from a mixture of plant species adapted to the specific site would be used for seeding. The mixture would be a variety of browse, forbs, and grass species that are desirable for both livestock and wildlife.



## Appendix 8 (Continued)

Treatment areas would not be grazed by livestock until vegetation becomes established. In most cases, two growing seasons of rest would be required.

In order to protect known cultural values, threatened, endangered, and sensitive plant and animal species, a clearance would be required prior to chaining.

Care would be taken to locate and protect all legal markers including cadastral, property, and claim markers.

### Clear Cuts

All trees with a stump of over 3 inches would be cut, except for those marked for wildlife use.

Cutting and harvesting areas would be closed when weather conditions would result in excessive erosion, soil compaction, and rutting of roads.

Stump height would not exceed 12 inches.

In order to protect known cultural values, threatened, endangered, and sensitive plant and animal species, a clearance would be required prior to cutting.

### Reservoir

In order to protect known cultural values, threatened, endangered, and sensitive plant and animal species, a clearance would be required prior to construction.

The borrow areas and reservoir dykes would be revegetated.

BLM earthwork guidelines and specifications would be followed for the construction of small retention dams and reservoirs.

### Seeps-Springs

A cooperative agreement between BLM and permittee for construction and maintenance would be developed where applicable.

In order to protect known cultural values, threatened, endangered, and sensitive plant and animal species, a clearance would be required prior to development.

The sites would be restored to the original conformation of the site. Seeding of adapted species would be used to restore disturbed areas.

Some water would be left at the original source for wildlife purposes.

A wildlife escape device would be installed in all open water troughs capable of trapping wildlife.



## Appendix 8 (Continued)

Water troughs and above-ground tanks and facilities would be designed and painted to blend with the natural environment. Water tanks would be anchored with wooden posts.

### Guzzlers

The shape and color of guzzlers would blend with the natural environment.

A wildlife escape ramp would be installed in conjunction with all open water troughs capable of trapping wildlife.

Fencing to restrict livestock and wildlife from the collection and storage areas would comply with BLM fence stipulations.

### Fencing

All fences would be built according to BLM specification.

Clearing of fence lines prior to construction would be limited to brush removal.

Gates would be installed along the fence at intersections of all official access roads or trails; in natural passes, and other strategic places to facilitate planned movement of livestock.

A cooperative agreement between BLM and permittee for construction and maintenance of fences would be developed where applicable.

A clearance for cultural values, and threatened, endangered, and sensitive species would be required prior to construction.

### Water Pipelines

A cooperative agreement between BLM and permittee for construction and maintenance would be developed where applicable.

In order to protect known cultural values, threatened, endangered, and sensitive plant and animal species, a clearance would be required prior to construction.

The sites would be restored to the original conformation of the land. Seeding of adapted species would be used to restore disturbed areas.

A wildlife escape device would be installed in all watering troughs capable of trapping wildlife.

Water troughs and above-ground tanks and facilities would be designed and painted to blend with the natural environment. Water tanks would be anchored with wooden posts.



**UTILITY CORRIDOR SEGMENTS**  
**CURRENT MANAGEMENT ALTERNATIVE - CORRIDOR 1**

## LAND OWNERSHIP

	BLM		BLM		BLM	BLM
p				p		

[illegible][illegible][illegible]

18 miles



# UTILITY CORRIDOR SEGMENTS CURRENT MANAGEMENT ALTERNATIVE - CORRIDOR 2

REFER TO FIGURE 2 - 5

## LAND OWNERSHIP

BLM	BLM	BLM
S	S	
State		
Private		

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range
A

## WATERSHED

100 year floodplain
Public water reserve
Critical/severe erosion area

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES

Flora	0	5	10	15 miles
	F	F	F	

NORTH TO SOUTH



REFER TO FIGURE 2 - 5

	BLM	BLM	BLM
	S		S
P			

Elk summer range				
Elk winter range				
Elk calving areas				
Deer summer range				
Deer winter range				
Deer lawning areas				
Sage Grouse leks				
Crucial Antelope range		A		A

100 year floodplain						
Public water reserve						
Critical/severe erosion area						

Campgrounds							
VRM Class II							
VRM Class III							
River Corridor							
Overlook							

Productive areas

Flora

0 5 10 15 20 23 miles

F



# UTILITY CORRIDOR SEGMENTS CURRENT MANAGEMENT ALTERNATIVE - CORRIDOR 4

REFER TO FIGURE 2 - 5

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM
	S		S	
				P

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	
Deer winter range	
Deer lawning areas	
Sage Grouse leks	
Crucial Antelope range	A

## WATERSHED

100 year floodplain	
Public water reserve	
Critical/severe erosion area	

## RECREATION

Campgrounds	
VRM Class II	
VRM Class III	
River Corridor	
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES

Flora	
-------	--

WEST TO EAST

14 miles

10

5

0



# UTILITY CORRIDOR SEGMENTS CURRENT MANAGEMENT ALTERNATIVE - CORRIDOR 5

REFER TO FIGURE 2 - 5

## LAND OWNERSHIP

BLM	BLM	BLM
State		
Private	P	P

## WILDLIFE

Elk summer range		
Elk winter range		
Elk calving areas		
Deer summer range		D
Deer winter range		
Deer lawning areas		
Sage Grouse leks		
Crucial Antelope range	A	A

## WATERSHED

100 year floodplain	FL
Public water reserve	
Critical/severe erosion area	

## RECREATION

Campgrounds		
VRM Class II		V
VRM Class III		
River Corridor		
Overlook		

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES



NORTH TO SOUTH







# UTILITY CORRIDOR SEGMENTS CURRENT MANAGEMENT ALTERNATIVE - CORRIDOR 7

REFER TO FIGURE 2 - 5

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM
S	S	P	P	P

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	
Deer lawning areas	
Sage Grouse leks	
Crucial Antelope range	

## WATERSHED

100 year floodplain	FL	FL
Public water reserve		
Critical/severe erosion area	C/S	

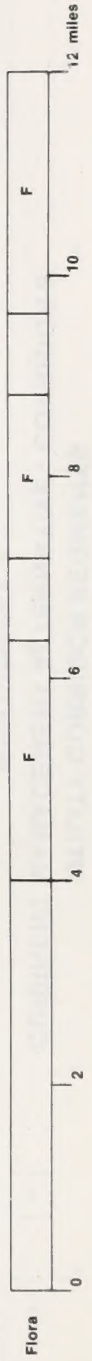
## RECREATION

Campgrounds					
VRM Class II	V				
VRM Class III		V	V	V	
River Corridor					
Overlook					

## WOODLANDS

Productive areas	
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## THREATENED AND ENDANGERED SPECIES



WEST TO EAST



# UTILITY CORRIDOR SEGMENTS CURRENT MANAGEMENT ALTERNATIVE - CORRIDOR 8

REFER TO FIGURE 2 - 5

## LAND OWNERSHIP

BLM		BLM		BLM		BLM
State		S				
Private	P				P	

## WILDLIFE

Elk summer range						
Elk winter range				E		
Elk calving areas						
Deer summer range						
Deer winter range					D	
Deer lawning areas						
Sage Grouse leks						
Crucial Antelope range						

## WATERSHED

100 year floodplain	FL		FL	
Public water reserve				
Critical/severe erosion area		C/S		

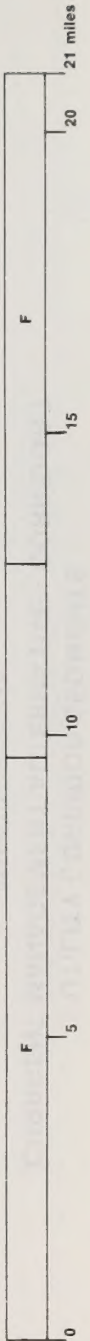
## RECREATION

Campgrounds				
VRM Class II				
VRM Class III				
River Corridor				
Overlook				

## WOODLANDS

Productive areas		P	
------------------	--	---	--

## THREATENED AND ENDANGERED SPECIES



NORTH TO SOUTH



REFER TO FIGURE 2 - 5

[illegible]

Elk summer range			E	
Elk winter range			E	
Elk calving areas				
Deer summer range				D
Deer winter range			D	
Deer fawning areas				
Sage Grouse leks				S
Crucial Antelope range				

100 year floodplain	
Public water reserve	
Critical/severe erosion area	C/S

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

Productive areas	p	p	p	p	p

[illegible]

## NORTH TO SOUTH



# UTILITY CORRIDOR SEGMENTS RESOURCE PROTECTION ALTERNATIVE - CORRIDOR 1

REFER TO FIGURE 2 - 11

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM	BLM	BLM	BLM
	S	S					

## WILDLIFE

Elk summer range							
Elk winter range							
Elk calving areas							
Deer summer range							
Deer winter range							
Deer lawning areas							
Sage Grouse leks							
Crucial Antelope range							

## WATERSHED

100 year floodplain							
Public water reserve							
Critical/severe erosion area							

## RECREATION

Campgrounds							
VRM Class II							
VRM Class III							
River Corridor							
Overlook							

## WOODLANDS

Productive areas							
------------------	--	--	--	--	--	--	--

## THREATENED AND ENDANGERED SPECIES

Flora							
-------	--	--	--	--	--	--	--

NORTH TO SOUTH

37 miles



# UTILITY CORRIDOR SEGMENTS RESOURCE PROTECTION ALTERNATIVE - CORRIDOR 2

REFER TO FIGURE 2 - 11

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM
State			S	
Private	P		P	P

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer lawning areas
Sage Grouse leks
Crucial Antelope range

## WATERSHED

100 year floodplain
Public water reserve
Critical/severe erosion area

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES

Flora
-------

16.5 miles

NORTH TO SOUTH



REFER TO FIGURE 2 - 11

BLM			BLM		BLM		BLM
	S		S			S	
		P					

Elk summer range				
Elk winter range				
Elk calving areas				
Deer summer range		D		D
Deer winter range		D		D
Deer fawning areas				
Sage Grouse leks				
Crucial Antelope range				

100 year floodplain
Public water reserve
Critical/severe erosion area

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

Productive areas

Flora	0	5	10	15
			F	

## WEST TO EAST

20 miles



REFER TO FIGURE 2 - 11

BLM			BLM	BLM
			S	
				P

## WILDLIFE

Elk summer range			
Elk winter range			
Elk calving areas			
Deer summer range			
Deer winter range			
Deer fawning areas			
Sage Grouse leks			
Crucial Antelope range	A		A

## WATERSHED

100 year floodplain	
Public water reserve	
Critical/severe erosion area	C/S

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas

## THREATENED AND ENDANGERED SPECIES

Region	Flora (F)
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15

19 miles

## NORTH TO SOUTH



REFER TO FIGURE 2 - 11

BLM		BLM		BLM		BLM		BLM
	S		S			S		S

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	
Deer winter range	
Deer fawning areas	
Sage Grouse leks	
Crucial Antelope range	A

100 year floodplain		FL
Public water reserve		
Critical/severe erosion area		C/S

Campgrounds		
VRM Class II		V
VRM Class III		
River Corridor		
Overlook		

Productive areas

## WEST TO EAST



# UTILITY CORRIDOR SEGMENTS RESOURCE PROTECTION ALTERNATIVE - CORRIDOR 6

REFER TO FIGURE 2 - 11

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private		

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	
Deer winter range	
Deer fawning areas	
Sage Grouse leks	
Crucial Antelope range	A

## WATERSHED

100 year floodplain	
Public water reserve	
Critical/severe erosion area	

## RECREATION

Campgrounds	
VRM Class II	
VRM Class III	
River Corridor	
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES

Flora	
-------	--

5.8 miles

WEST TO EAST



# UTILITY CORRIDOR SEGMENTS RESOURCE PROTECTION ALTERNATIVE - CORRIDOR 7

REFER TO FIGURE 2 - 11

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private	P	

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	D
Deer fawning areas	
Sage Grouse leks	
Crucial Antelope range	A

## WATERSHED

100 year floodplain	
Public water reserve	
Critical/severe erosion area	

## RECREATION

Campgrounds	
VRM Class II	
VRM Class III	
River Corridor	
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES

Flora	F	F	F
-------	---	---	---

10.8 miles

10

5

0

NORTH TO SOUTH



REFER TO FIGURE 2 - 11

[illegible]

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range

FL				
100 year floodplain				
Public water reserve				
Critical/severe erosion area	-C/S	C/S		C/S

Campgrounds	
VRM Class II	V
VRM Class III	V
River Corridor	
Overlook	

Productive areas

Flora	0	5	10	15	20
		F		F	F

22.5 miles

## WEST TO EAST



REFER TO FIGURE 2 - 19

[illegible]

Elk summer range		E
Elk winter range		
Elk calving areas		
Deer summer range		D
Deer winter range		
Deer fawning areas		
Sage Grouse leks		
Crucial Antelope range		

100 year floodplain
Public water reserve
Critical/severe erosion area

Campgrounds	C
VRM Class II	
VRM Class III	
River Corridor	
Overlook	

Productive areas			
P		P	P



REFER TO FIGURE 2 - 19

LAND OWNERSHIP	BLM	State	Private
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**WILDLIFE**

Elk summer range

Elk winter range

Elk calving areas

Deer summer range

Deer winter range

Deer lawning areas

Sage Grouse leks

Crucial Antelope range

**WATERSHED**  
**100 year floodplain**  
**Public water reserve**  
**Critical/severe erosion area**

RECREATION  
Campgrounds  
VRM Class II  
VRM Class III  
River Corridor  
Overlook

**WOODLANDS**  
Productive areas

THREATENED AND ENDANGERED SPECIES  
Flora

## NORTH TO SOUTH



## REFER TO FIGURE 2 - 19

LAND OWNERSHIP					REFER TO FIGURE 2 - 19				
BLM		BLM		BLM		BLM		BLM	
State				S				S	
Private	P								

WILDLIFE	
Elk summer range	E
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	
Deer lawning areas	
Sage Grouse leks	S
Crucial Antelope range	

100 year floodplain	FL
Public water reserve	
Critical/severe erosion area	

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

WOODLANDS	
Productive areas	
	P



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 4

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM			BLM		BLM
State				S	
Private	P				P

## WILDLIFE

Elk summer range					E
Elk winter range	E		E		
Elk calving areas					
Deer summer range					D
Deer winter range	D		D		
Deer fawning areas					
Sage Grouse leks					
Crucial Antelope range					

## WATERSHED

100 year floodplain					
Public water reserve					
Critical/severe erosion area	C/S		C/S		C/S

## RECREATION

Campgrounds					
VRM Class II					V
VRM Class III					
River Corridor					
Overlook					

## WOODLANDS

Productive areas	P		P		P
------------------	---	--	---	--	---

## THREATENED AND ENDANGERED SPECIES

Flora	F		F		
-------	---	--	---	--	--

20 miles

15

10

5

NORTH TO SOUTH



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 5

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM	BLM	BLM	BLM
State	S				S		S
Private				P			

## WILDLIFE

Elk summer range							E
Elk winter range							E
Elk calving areas							
Deer summer range							
Deer winter range							D
Deer fawning areas							
Sage Grouse leks							
Crucial Antelope range							

## WATERSHED

100 year floodplain							
Public water reserve							
Critical/severe erosion area					C/S		

## RECREATION

Campgrounds					C		C
VRM Class II							
VRM Class III							
River Corridor							
Overlook							

## WOODLANDS

Productive areas					P		P
------------------	--	--	--	--	---	--	---

## THREATENED AND ENDANGERED SPECIES

Flora	F						
-------	---	--	--	--	--	--	--

NORTH TO SOUTH

16 miles



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 6

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	
State		
Private	P	

## WILDLIFE

Elk summer range		
Elk winter range	E	
Elk calving areas		
Deer summer range		
Deer winter range	D	D
Deer fawning areas		
Sage Grouse leks		
Crucial Antelope range		

433

## WATERSHED

100 year floodplain	FL	
Public water reserve		
Critical/severe erosion area		

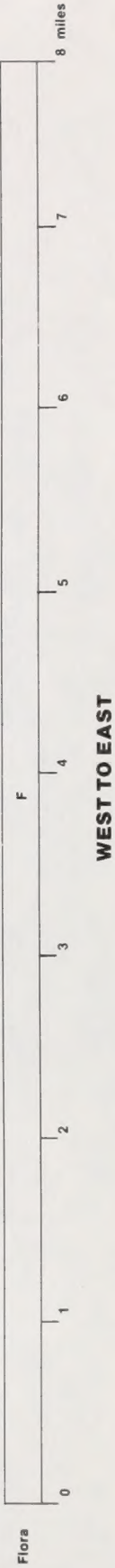
## RECREATION

Campgrounds		
VRM Class II		
VRM Class III		
River Corridor		
Overlook		

## WOODLANDS

Productive areas	P	
------------------	---	--

## THREATENED AND ENDANGERED SPECIES





# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 7

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM	BLM
S	S	S	S	S	S
P	P	P	P	P	P

## WILDLIFE

Elk summer range					
Elk winter range					E
Elk calving areas					
Deer summer range	D				
Deer winter range	D				D
Deer lawning areas					
Sage Grouse leks					
Crucial Antelope range					

## WATERSHED

100 year floodplain	FL				
Public water reserve					
Critical/severe erosion area		C/S			

## RECREATION

Campgrounds					
VRM Class II	V				
VRM Class III			V		
River Corridor					
Overlook					

## WOODLANDS

Productive areas		P	P	P	P
------------------	--	---	---	---	---

## THREATENED AND ENDANGERED SPECIES

Flora	F	F	F	F	F
-------	---	---	---	---	---

26 miles

NORTH TO SOUTH



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 8

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM	BLM	BLM
S	S				S	
P				P		P

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	D
Deer lawning areas	D
Sage Grouse leks	
Crucial Antelope range	

## WATERSHED

100 year floodplain	FL	FL	FL
Public water reserve			
Critical/severe erosion area			

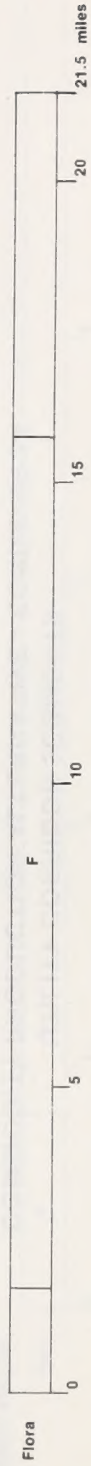
## RECREATION

Campgrounds	C	C	
VRM Class II			
VRM Class III	V	V	V
River Corridor			
Overlook			

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES



NORTH TO SOUTH



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 8A

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM
State
Private

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range

## WATERSHED

100 year floodplain
Public water reserve
Critical/severe erosion area

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES





# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 9

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private		

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer lawning areas
Sage Grouse leks
Crucial Antelope range

## WATERSHED

100 year floodplain
Public water reserve
Critical/severe erosion area
C/S

## RECREATION

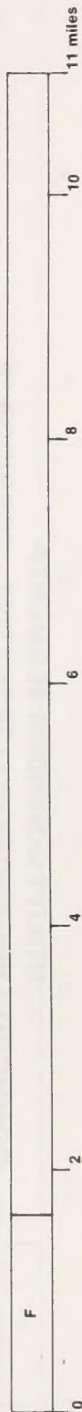
Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES

### Flora









# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 11

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM
State	S
Private	

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	D
Deer fawning areas	
Sage Grouse leks	
Crucial Antelope range	

## WATERSHED

100 year floodplain	FL
Public water reserve	
Critical/severe erosion area	C/S

## RECREATION

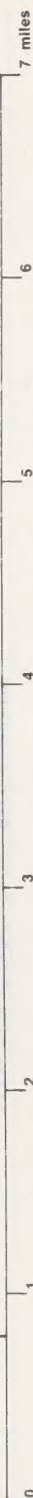
Campgrounds	
VRM Class II	
VRM Class III	
River Corridor	RC
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES

Flora	F
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# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 12

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM
S	S	S	S	S

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	
Deer winter range	
Deer fawning areas	
Sage Grouse leks	
Crucial Antelope range	

## WATERSHED

100 year floodplain	FL
Public water reserve	
Critical/severe erosion area	C/S

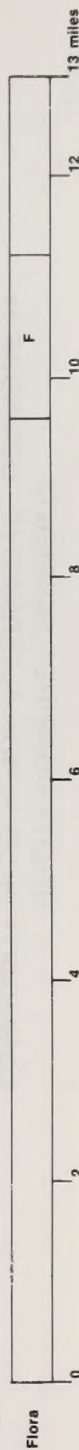
## RECREATION

Campgrounds	
VRM Class II	V
VRM Class III	
River Corridor	
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES





REFER TO FIGURE 2 - 19

	BLM		BLM		BLM		BLM		P		P
		S		S		S					

Elk summer range			
Elk winter range			
Elk calving areas			
Deer summer range			
Deer winter range			
Deer fawning areas			
Sage Grouse leks			
Crucial Antelope range		A	A

100 year floodplain
Public water reserve
Critical/severe erosion area

Campgrounds			
VRM Class II			
VRM Class III		V	
River Corridor			
Overlook			

Productive areas

Flora	F
	0
	5
	10
	15

15

10

5

## WEST TO EAST

20 miles



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 14

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM
State	
Private	

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	
Deer winter range	
Deer lawning areas	
Sage Grouse leks	
Crucial Antelope range	A

## WATERSHED

100 year floodplain	
Public water reserve	
Critical/severe erosion area	

## RECREATION

Campgrounds	
VRM Class II	V
VRM Class III	
River Corridor	
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES

Flora	
-------	--

10 miles

WEST TO EAST



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 15

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private		

## WILDLIFE

Elk summer range  
Elk winter range  
Elk calving areas  
Deer summer range  
Deer winter range  
Deer fawning areas  
Sage Grouse leks  
Crucial Antelope range

## WATERSHED

100 year floodplain  
Public water reserve  
Critical/severe erosion area

## RECREATION

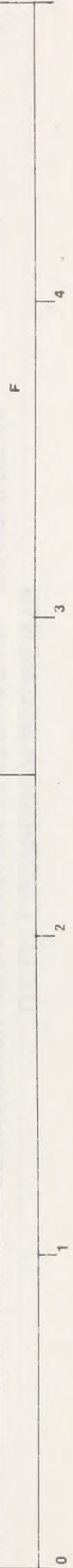
Campgrounds  
VRM Class II  
VRM Class III  
River Corridor  
Overlook

## WOODLANDS

Productive areas

## THREATENED AND ENDANGERED SPECIES

Flora





# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 16

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private		

## WILDLIFE

Elk summer range  
Elk winter range  
Elk calving areas  
Deer summer range  
Deer winter range  
Deer lawning areas  
Sage Grouse leks  
Crucial Antelope range

## WATERSHED

100 year floodplain  
Public water reserve  
Critical/severe erosion area

## RECREATION

Campgrounds  
VRM Class II  
VRM Class III  
River Corridor  
Overlook

## WOODLANDS

Productive areas

## THREATENED AND ENDANGERED SPECIES

Flora

0 1 3 5 7 9 miles

WEST TO EAST



UTILITY CORRIDOR SEGMENTS  
COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 17

REFER TO FIGURE 2 - 19

LAND OWNERSHIP

BLM	BLM		BLM
State			S
Private	P		

WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	D
Deer lawning areas	
Sage Grouse leks	
Crucial Antelope range	

WATERSHED

100 year floodplain	FL
Public water reserve	
Critical/severe erosion area	C/S

RECREATION

Campgrounds	
VRM Class II	
VRM Class III	V
River Corridor	
Overlook	

WOODLANDS

Productive areas	
------------------	--

THREATENED AND ENDANGERED SPECIES

Flora	F
-------	---

NORTH TO SOUTH

5 miles

4

3

2

1

0



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 18

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM	BLM
State	S	S	S
Private			

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range

## WATERSHED

FL
100 year floodplain
Public water reserve
Critical/severe erosion area

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES

Flora
-------

WEST TO EAST

24 miles



REFER TO FIGURE 2 - 19

LAND OWNERSHIP	REFER TO FIGURE 2 - 19									
	BLM	BLM	BLM	BLM	BLM	BLM	BLM	BLM	BLM	BLM
State	S		S		S		S		S	
Private	P	P	P		P		P		P	

WILDLIFE	
Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	D
Deer fawning areas	
Sage Grouse leks	
Crucial Antelope range	

100 year floodplain	FL					
Public water reserve						
Critical/severe erosion area	C/S	C/S	C/S	C/S	C/S	C/S

Campgrounds		
VRM Class II	V	
VRM Class III	V	
River Corridor	RC	
Overlook		

Productive areas

Taxonomic Group	Number of Species
Fish	15
Amphibians	10
Reptiles	5
Birds	5
Mammals	5



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 20

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM
State		
Private	P	

## WILDLIFE

Elk summer range	E	
Elk winter range		
Elk calving areas		
Deer summer range	D	
Deer winter range		
Deer fawning areas		
Sage Grouse leks		
Crucial Antelope range		

## WATERSHED

100 year floodplain	FL	
Public water reserve		
Critical/severe erosion area	C/S	C/S

## RECREATION

Campgrounds	
VRM Class II	
VRM Class III	
River Corridor	
Overlook	

## WOODLANDS

Productive areas	P
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## THREATENED AND ENDANGERED SPECIES

Flora	F	1	2	3	4	5	6	7.2 miles
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NORTH TO SOUTH



# UTILITY CORRIDOR SEGMENTS COMMODITY PRODUCTION ALTERNATIVE - CORRIDOR 21

REFER TO FIGURE 2 - 19

## LAND OWNERSHIP

BLM	BLM	BLM	
State	S		S
Private			

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range
A

## WATERSHED

100 year floodplain
Public water reserve
Critical/severe erosion area
C/S

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES



NORTH TO SOUTH



REFER TO FIGURE 2 - 26

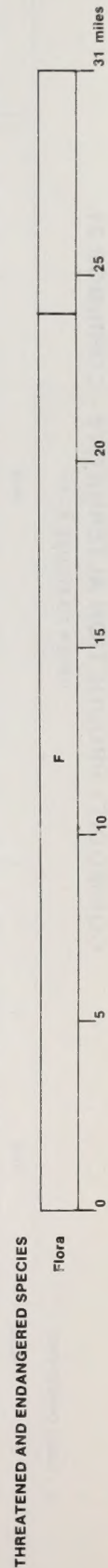
LAND OWNERSHIP	REFER TO FIGURE 2 - 26					
	BLM	BLM		BLM	BLM	BLM
State	S				S	S
Private						P

WILDLIFE			
Elk summer range			
Elk winter range		E	
Elk calving areas			
Deer summer range			D
Deer winter range		D	
Deer lawning areas			
Sage Grouse leks			
Crucial Antelope range			

WATERSHED		
100 year floodplain	— FL	
Public water reserve		
Critical/severe erosion area	C/S	— C/S

RECREATION		
Campgrounds	C	
VRM Class II		
VRM Class III		
River Corridor		
Overlook		

WOODLANDS		P	P	P	P	P	P
Productive areas							





REFER TO FIGURE 2 - 26

[illegible]

Elk summer range		E
Elk winter range		
Elk calving areas		E
Deer summer range		D
Deer winter range		
Deer fawning areas		
Sage Grouse leks		
Crucial Antelope range		

100 year floodplain			
Public water reserve			
Critical/severe erosion area	C/S		C/S

[illegible]

Productive areas		p	p	p

		F		F		10	20	30
--	--	---	--	---	--	----	----	----

## NORTH TO SOUTH

39 miles



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 3

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	S
Private		

## WILDLIFE

Elk summer range		
Elk winter range		
Elk calving areas		
Deer summer range	D	D
Deer winter range	D	D
Deer lawning areas		
Sage Grouse leks		
Crucial Antelope range	A	

## WATERSHED

100 year floodplain		FL	FL
Public water reserve			
Critical/s vere erosion area	C/S	C/S	C/S

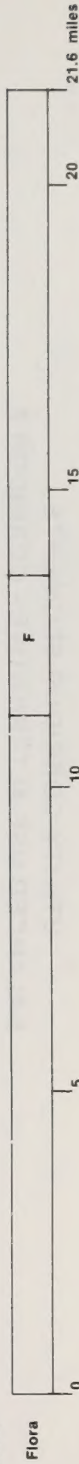
## RECREATION

Campgrounds		
VRM Class II	V	
VRM Class III		
River Corridor		
Overlook		

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES



WEST TO EAST



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 4

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM
State	S
Private	

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	D
Deer fawning areas	
Sage Grouse leks	
Crucial Antelope range	

## WATERSHED

100 year floodplain	
Public water reserve	
Critical/severe erosion area	C/S

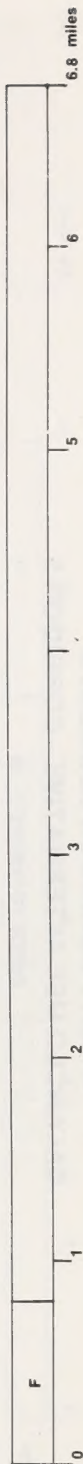
## RECREATION

Campgrounds	
VRM Class II	
VRM Class III	
River Corridor	RC
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES





REFER TO FIGURE 2 - 26

	BLM	BLM	- BLM	BLM	BLM	BLM
	S		S			P

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	
Deer winter range	
Deer lawning areas	
Sage Grouse leks	
Crucial Antelope range	A

100 year floodplain		
Public water reserve		
Critical/severe erosion area	C/S	

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

Productive areas

## NORTH TO SOUTH



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 6

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM
S	S			
P	P			P

## WILDLIFE

Elk summer range				
Elk winter range				
Elk calving areas				
Deer summer range	D		D	
Deer winter range	D		D	
Deer fawning areas				
Sage Grouse leks				
Crucial Antelope range				

## WATERSHED

100 year floodplain	FL		FL	
Public water reserve				
Critical/severe erosion area		C/S		

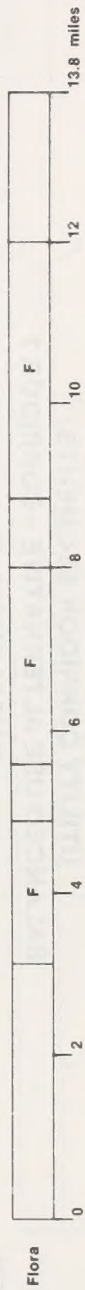
## RECREATION

Campgrounds				
VRM Class II	V		V	
VRM Class III			V	
River Corridor				
Overlook				

## WOODLANDS

Productive areas				
------------------	--	--	--	--

## THREATENED AND ENDANGERED SPECIES





REFER TO FIGURE 2 - 26

BLM	BLM	BLM
State	S	
Private		

WILDLIFE	
Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	D
Deer lawning areas	
Sage Grouse leks	
Crucial Antelope range	

WATERSHED	
100 year floodplain	FL
Public water reserve	
Critical/severe erosion area	C/S

RECREATION	
Campgrounds	
VRM Class II	V
VRM Class III	
River Corridor	
Overlook	

WOODLANDS  
Productive areas

Flora	1	2	3



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 8

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM
State			S	
Private	P	P	P	P

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	
Deer winter range	D
Deer fawning areas	
Sage Grouse leks	
Crucial Antelope range	

## WATERSHED

100 year floodplain	FL
Public water reserve	
Critical/severe erosion area	

## RECREATION

Campgrounds	
VRM Class II	
VRM Class III	V
River Corridor	
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES

Flora	F
-------	---

NORTH TO SOUTH

16.5 miles



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 9

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private		

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range

## WATERSHED

100 year floodplain
Public water reserve
Critical/severe erosion area

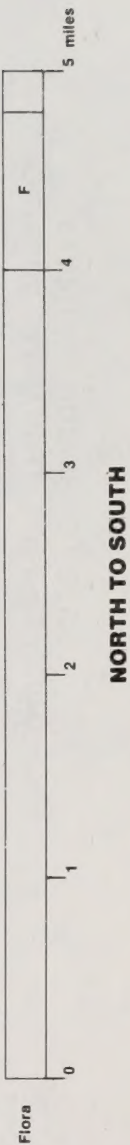
## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES





# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 10

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM	BLM	BLM	BLM	BLM
S	S	S	S	S	S	S

## WILDLIFE

Elk summer range						
Elk winter range						
Elk calving areas						
Deer summer range						
Deer winter range						
Deer lawning areas						
Sage Grouse leks						
Crucial Antelope range						

## WATERSHED

100 year floodplain						
Public water reserve						
Critical/severe erosion area						

## RECREATION

Campgrounds						
VRM Class II						
VRM Class III						
River Corridor						
Overlook						

## WOODLANDS

Productive areas						
------------------	--	--	--	--	--	--

## THREATENED AND ENDANGERED SPECIES

Flora						
-------	--	--	--	--	--	--

WEST TO EAST

17 miles



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 11

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private		

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range
A

## WATERSHED

100 year floodplain
Public water reserve
Critical/severe erosion area

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES

Flora
-------

5.8 miles

WEST TO EAST



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 12

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM	BLM
S		S	
State			
Private			

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	
Deer winter range	
Deer lawning areas	
Sage Grouse leks	
Crucial Antelope range	A

## WATERSHED

100 year floodplain	
Public water reserve	
Critical/severe erosion area	

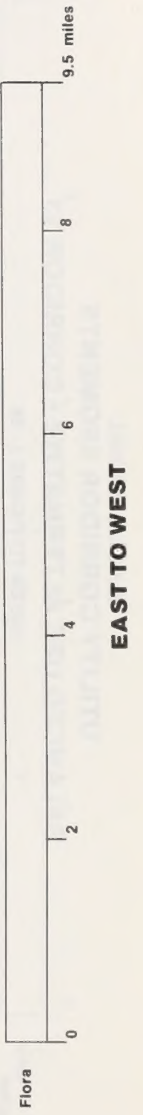
## RECREATION

Campgrounds	
VRM Class II	
VRM Class III	
River Corridor	
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES





# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 13

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private	P	

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range
A

## WATERSHED

100 year floodplain
Public water reserve
C/S
Critical/severe erosion area

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES



NORTH TO SOUTH



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 14

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM
State	S
Private	

## WILDLIFE

Elk summer range	
Elk winter range	
Elk calving areas	
Deer summer range	D
Deer winter range	D
Deer lawning areas	
Sage Grouse leks	
Crucial Antelope range	A

## WATERSHED

100 year floodplain	
Public water reserve	
Critical/severe erosion area	C/S

## RECREATION

Campgrounds	
VRM Class II	
VRM Class III	
River Corridor	RC
Overlook	

## WOODLANDS

Productive areas	
------------------	--

## THREATENED AND ENDANGERED SPECIES



WEST TO EAST



# UTILITY CORRIDOR SEGMENTS BALANCED USE ALTERNATIVE - CORRIDOR 15

REFER TO FIGURE 2 - 26

## LAND OWNERSHIP

BLM	BLM	BLM
State	S	
Private		

## WILDLIFE

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer lawning areas
Sage Grouse leks
Crucial Antelope range

## WATERSHED

100 year floodplain
Public water reserve
Critical/severe erosion area

## RECREATION

Campgrounds
VRM Class II
VRM Class III
River Corridor
Overlook

## WOODLANDS

Productive areas
------------------

## THREATENED AND ENDANGERED SPECIES

Flora
-------

0 0.5 1 1.5 1.8 miles

WEST TO EAST



REFER TO FIGURE 2 - 26

[illegible]

Elk summer range
Elk winter range
Elk calving areas
Deer summer range
Deer winter range
Deer fawning areas
Sage Grouse leks
Crucial Antelope range

100 year floodplain									
Public water reserve									
Critical/severe erosion area		C/S	C/S		C/S		C/S		C/S

Campgrounds		
VRM Class II	V	
VRM Class III	V	
River Corridor	RC	
Overlook		

Productive areas

Flora

WEST TO EAST

0 2 4 6 8 10 12 14 16 18 20 22.5 miles

F F F F F F



# APPENDIX 10

## ECOLOGICAL SITES AND CONDITIONS BY LOCALITY

- (1)Includes 2,875 altered acres by condition  
 (3)Includes 3 altered acres by condition  
 (5)Includes 11,552 altered acres by condition  
 (7)Includes 1,855 altered acres by condition  
 (9)Includes 257 altered acres by condition  
 (11)Includes 173 altered acres by condition  
 (2)Includes 719 altered acres by condition (Blue Mountain)  
 (4)Includes 1,030 altered acres by condition  
 (6)Includes 8,135 altered acres by condition  
 (8)Includes 15,886 altered acres by condition  
 (10)Includes 11 altered acres by condition  
 (12)Includes 186 acres altered by condition (Book Cliffs)

P = Poor F = Fair G = Good E = Excellent

Zone	Eco-site	Habitat	Blue Mountain Condition			Bonanza-Rainbow Condition			Hill Creek Condition			Book Cliffs Condition		
			P	F	G	P	F	G	P	F	G	P	F	G
Azonal	Badlands				1,778			75,682			23,554			2,346
Azonal	Rock Outcrop				5,040			13,916			3,789		993	20,699
Azonal	Alkali Bottom	Greasewood, Alkali Sacatan												
Azonal	Alkali Flat	Greasewood, Squirreltail					57			429	736			14
Azonal	Loamy Bottom(3)	Big Sagebrush, Basin Wild Rye		108			12,627	1,783			3,816	1,041	2,391	310
Azonal	Riverflood Plain	Bluegrass, Wheatgrass, Willow		18			254	4,341	687		903	63	33	1,407
Azonal	Wet Salt Streambank	Squawbush, Sand Bar Willow, Inland					768	132						24
Azonal	Wet Fresh Meadow	Saltgrass Willow, Sedge		63			310	190					15	17
Desert	Alkali Bench	Shadscale, Wedgeleaf Nuttal Saltbush												10
Desert	Alkali Sand	Fourwing Saltbush, Indian Ricegrass					12,130	12,834	2,317		1,811	3,791		177
Desert	Clay (Shadscale)	Shadscale, Bottlebrush Squirreltail					2,750	172						184
Desert	Loam	Shadscale, Indian Ricegrass		14			12,540	11,418						
				203			88	9,427	576		495	450		



Zone	Eco-site	Habitat	Blue Mountain Condition			Bonanza-Rainbow Condition			Hill Creek Condition			Book Cliffs Condition		
			P	F	G	E	P	F	G	E	P	F	G	E
Desert	Sand	Fourwing Saltbush, Indian Ricegrass						1,671	5,853			40		
Desert	Sandy Loam	Indian Ricegrass, Galleta Grass					693	12,161	5,657			157		
Desert	Shallow Clay	Mat Saltbush, Galleta Grass		115				6,239	8,320	6,110	26	2,344	3,536	
Desert	Shallow Loam (Black Sagebrush)	Black Sagebrush, Galleta Grass						5,119	9,612			2,525	4,245	1,595
Desert	Shallow Loam (Shadscale)	Shadscale, Galleta Grass		101			1,286	8,251	11,017			5,704	15,103	
Desert	Shaly Shallow Loam	Greasebush, Galleta Grass						2,090	2,117			2,514	4,352	1,570
Desert	Very Steep Shallow Loam (Shadscale)	Shadscale, Galleta Grass, Salina Wild Rye		21				6,023	2,150					
Semi-Desert	Gravelly Loam (Wyoming Big Sagebrush)	Wyoming Big Sagebrush, Galleta Grass, Indian Ricegrass		235	113			3,649	11,046			3,901	406	
Semi-Desert	Gravelly Sandy Loam	Wyoming Big Sagebrush, Indian Ricegrass			139			44,392	13,074	1,280	2,170	1,081	58	
Semi-Desert	Loam (Wyoming Big Sagebrush)	Wyoming Big Sagebrush, Indian Ricegrass		282	224		5,588	25,013	12,104			1,116	63	577
Semi-Desert	Sand	Fourwing Saltbush, Indian Ricegrass						1,089	1,900			1,343		
Semi-Desert	Sandy Loam	Fourwing Saltbush, Wyoming Big Sagebrush, Indian Ricegrass, Needle and Thread Grass		119	950		1,009	19,489	11,481	6,571				167
Semi-Desert	Shallow Loam (Wyoming Big Sagebrush)	Wyoming Big Sagebrush, Blue Bunch Wheatgrass, Indian Ricegrass			545			23,203	39,405	2,265	936	4,789	60	547



Zone	Eco-site	Habitat	Blue Mountain Condition			Bonanza-Rainbow Condition			Hill Creek Condition			Book Cliffs Condition			
			P	F	G	E	P	F	G	E	P	F	G	E	
Semi-Desert	Shallow Loam (Black Sagebrush)	Black Sagebrush, Indian Ricegrass, Bluegrama			234		18,887	8,088			3,856	22,547	1,678	99	98
Semi-Desert	Shallow Loam (Utah Juniper-Pinyon)	Utah Juniper, Pinyon Pine, Black Sagebrush, Salina													
		Wild Rye	2,613	2,659			15,608	65,911			501	2,082	102	174	2,070
Semi-Desert	Silt Loam	Winterfat, Indian Ricegrass				58	1,575	2,589							3,343
Semi-Desert	Stony Loam (Utah Juniper-Pinyon)	Utah Juniper, Pinyon Pine, Saline Wild Rye					2,153	177							
Upland	Clay	Western Wheatgrass, Shadsal												1,345	11
Upland	Loam (Big Sagebrush)(4)	Basin Big Sagebrush, Indian Ricegrass	37	24			1,308	479						9,627	6,251
Upland	Shallow Loam (Black Sagebrush)	Black Sagebrush, Needle and Thread Grass, Blue Bunch Wheatgrass			127		147	2,926				9			
Upland	Shallow Loam (Pinyon-Utah Juniper)(5)	Pinyon Pine, Utah Juniper, Salina Wild Rye			1,696	1,448									
Upland	Silt Loam	Fourwing Saltbush, Winterfat, Western Wheatgrass					2,927	6,910	5,582		340	4,668	149	9,005	58,711
															1,334
Upland	Stony Loam (Pinyon-Utah Juniper)(6)	Utah Juniper, Black Sagebrush, Western Wheatgrass						2,693						1,273	1,298
Upland	Stony Loam (Wyoming Big Sagebrush-Antelope Bitterbrush)(7)	Wyoming Big Sagebrush, Antelope Bitterbrush, Needle and Thread Grass			1,911		1,174	674						266	23,243
															15,073
							312				1,935			2,585	2,688
											459				



Zone	Eco-site	Habitat	Blue Mountain			Bonanza-Rainbow			Hill Creek			Book Cliffs		
			P	F	G	E	P	F	G	E	P	F	G	E
Upland	Very Steep Shallow Loam (Pinyon-Utah Juniper)(8)	Pinyon Pine, Utah Juniper, Birchleaf Mountain Mahogany, Salina Wild Rye			46			1,549	2,485			9,114	16,092	
Mountain	Loam(1)	Mountain Big Sagebrush, Western Wheatgrass		1,453	10,761	547								
Mountain	Stony Loam(2)(12)	Antelope Bitterbrush, Mountain Big Sagebrush, Needle and Thread Grass		526	2,044	99						573	8,525	
Mountain	Very Steep Stony Loam (Browse)(9)	Birchleaf Mountain Mahogany, Utah Serviceberry		1,241	31							2,274	13,440	708
Mountain	Loamy Bottom	Mountain Big Sagebrush, Basin Wild Rye, Bluegrass						16			385	4,054	2,273	
Mountain	Stony Loam (Browse)	Utah Serviceberry, Birchleaf Mountain Mahogany, Salina Wild Rye										3,114	13,572	1,922
Mountain	Stony Loam (Douglas fir)(10)	Douglas Fir, Snowberry, Western Wheatgrass										1,178	1,324	1,151
Mountain	Very Steep Stony Loam (Douglas Fir)(11)	Douglas Fir, Utah Serviceberry, Salina Wild Rye						73	818			11,727	12,307	19,014
High Mtn	Loam (Douglas Fir)	Douglas Fir, Elk Sedge										1,059	4	
High Mtn	Very Steep (Douglas Fir)	Douglas Fir, Snowberry										1,666	1,218	
High Mtn	Loam (Aspen)-Pyro-Climax	Aspen, Snowberry Sedge		3	61							2,666	1,617	

LOCALITY SUBTOTALS 645 7,981 27,433 2,094 9,001 257,519 343,940 22,845 3,854 34,324 98,068 3,701 433 64,247 195,895 43,483



# APPENDIX 11

## ALLOTMENT STATISTICS

Allotment Name	Allotment Num.	Fed.	State	Pvt.	Exc.	Good	Fair	Poor	Outcrop	Badland Rock	Numbers and Class of Livestock and Wild Horses		Season of Use	Active Average		Permittee	Avg. Acres Per AUM's		
											Class	Present Objective Numbers		AUM's	Use				
BLUE MOUNTAIN LOCALITY																			
Blue Mountain AMP	1167	0	700	0	935	132	100	0	Cattle	24	31			(a)142	186	I	E.L. Wilkens	212	2.6
5825									Horses	1	3			6	17			6	
									Cattle	23	40			(a)138	238		E.V. Wilkens	208	
									Horses	1	1			.6	8			6	
Cub Creek	872	355	0	0	546	0	0	326	Cattle	18	18			55	54	C	Rasmussen	124	
15.9																			
5823																			
Doc's Valley	8555	610	2526	592	5986	1657	0	320	Sheep	626	626			751	751	I	Chew	1187	8.2
5821									Cattle	49	49			294	294		Chew	294	
									Horses	7	7			42	42		Chew	42	
									Cattle	22	22			132	132		L. Wilkens	138	
Green River	19178	871	1044	972	7525	4475	119	6087	Sheep	2292	2552			1021	917	M	Chew	1201	13.6
5820									Cattle	79	79			237	237		Chew	237	
									Cattle	50	50			100	100		E.V. Wilkens	120	
									Cattle	25	25			50	50		L. Wilkens	60	
Point of Pines	5005	762	754	530	2383	1581	426	85	Cattle	261	262			(b)1308	304	I	L.G. Murray	1308	3.4
5822									Cattle	25	25			150	150		B. Murray	150	

(a) The Allotment Management Plan allows an additional 70 AUMs to each permittee; that is not shown as active preference. It is shown as full preference.  
 (b) Contains 628 Colorado AUM's managed by the Vernal District.

\*Allotment Management Category M = Maintain I = Improve C = Custodial



Appendix 11 (Continued)  
Allotment Statistics

Allotment Name	Ecological Condition				Acres	Numbers and Class of Livestock and Wild Horses		Season of Use	Active Average Pref. Use		Permittee	Avg. Acres Per AUM				
	Federal	Exc.	Good	Fair		Poor	Badland Rock		Class	Present Objective Numbers			AUM's	(AUM's) MIC*		
Stuntz Valley	3375	787	634	0	3239	136	0	0	Cattle	271	271	(c)1355	1355	I	M. Snow	2.5
5824																
Subtotals	38152	3385	5658	2094	20614	7981	645	6818	Lvstck W.Horses	5787	5835	0	0		6648	0
BONANZA-RAINBOW LOCALITY																
Antelope Draw	70581	7928	40	3970	19466	28818	0	18327	Sheep W.Horses	2904	5273	5800	3194	I	Preece	12.2
5854											45		420			540
Asphalt Draw	38559	5184	1404	1980	21596	13267	0	1716	Sheep	2662	4343	4343	2662	I	H. Seely	8.9
AMP 8817																
Badlands	12970	2292	0	40	4471	3580	0	4879	Cattle	247	260	780	741	I	L.G. Murray	16.6
5848																
Baerer Wash	14887	1974	563	0	3558	8905	130	2294	Sheep Cattle	918	1035	1242	1101	I	Chew Holmes	11.9
5832										8	8	12	12			16
Bohemian Bottoms	9334	1130	600	0	3104	4213	88	1929	Cattle Cattle	75	75	605	605	M	E. Young	15.1
5840										8	8	12	12		Holmes	16
Bonanza	22928	3275	491	0	2144	14880	693	5211	Sheep	1952	1625	1952	1827	I	Jones	11.7
5842																

(c) This allotment contains 570 Colorado AUM's managed by the Vernal District.



Appendix 11 (Continued)  
Allotment Statistics

Allotment Name Allotment Num.	Acres	Ecological Condition (Federal Acres)			Numbers and Class of Livestock and Wild Horses			Season of Use												Active Average Pref. Use		Avg. Full Acres Per AUM's	AUM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Fed.	State	Pvt. Exc.	Good	Fair	Poor	Outcrop	Badland Rock	Class	Present Numbers	Objective Numbers	J F M A M J J A S O N D A E A P A U U E C O E N B R R Y N L G P T V C												AUM's	Permittee																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Brewer 8831	2846	0	3	0	1394	1154	0	298	Cattle	30	30	30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

(d) This includes 500 AUM's in Colorado managed by the Vernal District.

(e) Data includes only 1 year since the merger of the Rabbit Mountain-Wagon Hound and Hells Hole Allotments.

(f) Managed by Colorado



Appendix 11 (Continued)  
Allotment Statistics

Allotment Name	Allotment Num.	Fed.	State	Pvt.	Exc.	Ecological Condition				Badland Rock	Numbers and Class of Livestock and Wild Horses			Season of Use												Active Average Pref. Use		Full Pref. AUM's	Avg. Acres Per AUM			
						(Federal Acres)	Good	Fair	Poor		Outcrop	Class	Present Numbers	Objective Numbers	J	F	M	A	M	J	J	A	S	O	N	D	AUM's			MIC*	Permittee	
Miners Gulch 5838	4556	106	0	0	0	591	3314	0	651	Cattle	100	102													102	100	0	C	Vincent's	129	30.0	
										Cattle	0	4													26	0			L.G. Murray	35		
										Cattle	0	4													26	0			Snow	32		
Olsen AMP 8816	103214	18430	13235	731	49799	38480	0	14204	Sheep	3040	8371														9208	3344		M	Olsen	10633	11.2	
Powder Wash 5857	22691	3504	666	0	9665	9580	2341	1105	Sheep	1586	1750														2100	1905		I	J. Siddoway	2307	10.8	
Raven Ridge 5851	8963	1232	751	0	685	5827	1400	1051	Sheep	1038	1112														(g)1112	1038		I	C&L Livestock	1438	8.1	
Sandwash 8818	54302	19306	6	0	28947	20697	312	4346	Sheep	1548	5850														7025	1858		M	Cook	8443	7.7	
Seven Sisters AMP 5845	15760	2777	0	2317	7315	4521	0	1607	Sheep	1021	1745														1920	1123		M	Amaya	2033	8.2	
									W.Horses	5	5															60					60	
Snake John 5860	9275	1262	142	0	712	7124	1377	62	Sheep	844	970														1164	1013		I	R. Siddoway	1447	8.0	
Spring Hollow 5862	4822	600	269	268	1372	2133	0	1049	Cattle	143	148														444	444		I	M. Snow	444	10.9	
(h)Stateline 5863	29740	3067	8934	1521	4300	21287	0	2632	Sheep	1245	2516														2516	1245		M	Woodward	3286	11.8	

(g)Contains 122 Colorado AUM's managed by the Vernal District.  
(h)This allotment contains 425 Colorado AUM's managed by the Vernal District.



Appendix 11 (Continued)  
Allotment Statistics

Allotment Name	Ecological Condition				Acres	Numbers and Class of Livestock and Wild Horses				Season of Use												Active Average Pref. Use		Avg. Acres Per AUM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	Allotment Num.	Fed.	State	Pvt.		Exc.	Good	Fair	Poor	Outcrop	Class	Present Numbers	Objective Numbers	J	F	M	A	M	J	A	S	O	N		D	AUM's	MIC*	Permittee	AUM's																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Stirrup AMP 5847	2652	136	468	0	634	1734	0	284	Cattle	15	15	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

(i) 751 AUM's on Lower McCook is included with Sweetwater AMP.

(j) Acreage is included in the following winter sheep allotments: Seven Sisters AMP, Little Emma, Stateline, Sandwash, Olsen AMP, Asphalt Draw AMP, Hells Hole.



Appendix 11 (Continued)  
Allotment Statistics

Allotment Name	Ecological Condition			Numbers and Class of Livestock and Wild Horses			Season of Use			Active Average Pref. Use		Permittee	Avg. Acres Per AUM
	Acres	(Federal Acres)		Good	Fair	Poor	Outcrop	Badland Rock	Class	Present Numbers	Objective Numbers	J F M A M J J A S O N D A E A P A U U E C O E N B R R Y N L G P T V C	
Subtotals	633299	63293	251883	8999	30215	51426				(k)61323	37352	(k)74079	
	97375	22843	257520	92054	W.Horses	40	50			0	480	600	
BOOK CLIFFS LOCALITY													
Atchee Ridge AMP 8824	110296	12745	19463	21696	65596	12201	221	10582	Cattle	560	715	(l)8584	10106 12.7
									Cattle	30	30	135	477
									Cattle	35	121	728	1166
Book Cliffs Pastures 8828	5166	18833	314	0	4396	693	0	77	Cattle	80	80	301	301 17.2
(m)Davis Canyon 8823	5831	1004	204	79	888	4286	0	578	Cattle		334		784 17.0
Horse Point AMP 8825	33133	3452	2611	2019	11259	15640	0	4215	Cattle	231	608	2346 (n)1398	3342 14.1
									W.Horses	25	25	(o)138	138
									W.Horses	5	5	(o)33	33
McClalland 8826	15270	42254	1416	2197	10043	2653	0	377	Cattle	196	224	1399	1399 10.9

(k)Does not include K Ranch.

(l)This includes 2442 cattle AUM's in Colorado managed by the Vernal District.

(m)This livestock allotment is managed by Colorado.

(n)Agency Draw Pasture has been in nonuse. Request has been made to change class of livestock from sheep to cattle.

(o)Wild horses within the Horse Point Allotment are part of the Hill Creek herd and the AUMs are included with the Hill Creek locality.



Ecological Condition (Federal Acres)	Numbers and Class of Livestock and Wild Horses	Season of Use	Active Average Pref. Use AUM's (AUM's)
--	---	---------------	--

(p) Includes 751 AUM's on Lower McCook.  
(q) Does not include Davis Canyon



Appendix 11 (Continued)  
Allotment Statistics

Allotment Name	Ecological Condition		Acres	Numbers and Class of Livestock and Wild Horses		Season of Use												Active Average Pref. Use		Full Pref. AUM's	Avg. Acres Per AUM													
	Federal Acres)			Badland Rock		Present Objective Numbers		J F M A M J J A S O N D A E A P A U U E C O E N B R R Y N L G P T V C														AUM's	Permittee											
Lower Sho-walter (Wild Horse Bench) 8811	18496	3432	0	0	5963	7285	0	5248	Cattle W.Horses	25	754	7	15													1508	50	M	Ute Tribe	1508	12.3	180		
Oil Shale 8813	14472	4155	22968	0	7147	5600	0	1725	Sheep W.Horses W.Horses	10	10	5	5													1098	(r)	0	C	S&H Ranches	1098	13.2	60	30
Pack Mountain-Wild Horse 8808	21457	2298	3	0	13184	1990	1280	5003	Sheep W.Horses	1328	1775	10	10													1775	1328	M	Smith	2100	12.1	120		
Santio-Sibello 8806	2249	6	1491	0	1390	178	0	681	Cattle	16	16													96	96	C	S&H Ranches	210	23.4					
Tabyago 8801	31631	905	0	3273	17432	6047	406	4473	Sheep W.Horses	1997	2995	45	55													2995	1997	M	Boren	3585	10.6	660		
Thorne-Ute-Broome 8812	3692	928	851	0	3	3010	0	679	Cattle	124	124													248	248	C	Ute Tribe	342	14.9					

(r) Request has been made to change class of livestock from sheep to cattle. No use has been made in the last 4 years.



Appendix 11 (Continued)  
Allotment Statistics

Allotment Name	Ecological Condition				Badland Rock				Numbers and Class of Livestock and Wild Horses				Season of Use				Active Average Pref. Use		Avg. Acres Per AUM								
	Acres	(Federal Acres)	Good	Fair	Poor	Exc.	Class	Present Numbers	Objective Numbers	J	F	M	A	M	J	J	A	S		O	N	D	Full Pref. AUM's				
Upper Sho-walter (Mustange) 8810	6065	0	0	53	4600	230	421	761	Cattle W.Horses	133 10	398 15											398 120	133	M	Ute Tribe	398 180	15.2
Ute 8809	6764	236	653	199	3059	3451	0	55	Cattle W.Horses	81 8	244 18											1464 96	488	M	Ute Tribe	1550 216	4.6
West Tabyago AMP 8807	23073	1030	31	177	14895	1356	1193	5452	Sheep W.Horses	1638 55	2689 60											2420 (s) 660	(s) 1474	M	Squires	2656 720	9.5
Subtotals	139949	26741	70724	3702	34325	3855	27343		Lvstck. W.Horses	5578 140	9231 188											12631 (t) 1710	6442			14247 (t) 2166	

(s)Only 1 year of data rest has been in non-use.  
(t)Includes wildhorse AUMs from Horse Point Allotment.

Key Areas = Those areas used dominantly for grazing by total class of animal.  
Average Use (AUM's) = The average use for 3 representative years from 1975 to 1982.  
Active Preference (AUM's) = That part of the preference which is not suspended non-use.  
The active preference can be licensed by the livestock operator.

Data Sources:

1. Vernal District Ecological Site, Condition and Site Inventories.
2. Book Cliffs Resource Area Livestock Permittee Casefiles
3. Book Cliffs Resource Area Wildhorse Casefiles
4. Book Cliffs Resource Area Selective Management Categories



Acres	Ecological Condition	Numbers and Class of Livestock and Wild Horses	Season of Use	Active Average Pref. Use	AUM's (AUM's) MIC* Permittee

Allotment Name	Allotment Num.	Fed.	State	Pvt.	Exc.	Good	Fair	Poor	Outcrop	Class	Present Numbers	Objective Numbers	J F M A M J J A S O N D A E A P A U U E C O E N B R R Y N L G P T V C	(p)7276	5822	I	S&H Ranches	8815	11.8
Sweetwater AMP	94853	15926	3465	17284	50741	19617	33	7178	Cattle	728	910								
Westwater Point	5595	693	0	66	3542	1433	0	554	Cattle	87	107			426	349	M	Graham	426	13.1
Winter Ridge AMP	33912	7666	679	140	25390	6732	179	1471	Cattle	165	277			1939	1153	I	DeLambert	2277	17.1
									Cattle	15	20			40	29		Graham	76	
									W.Horses	9	45				108			540	
Subtotals	304056	28152	171855	433	63255	43481	25032	W.Horses	39	75	3092		(q)23174	17351	108			q28385	540
HILL CREEK LOCALITY																			
Birchell	1712	0	0	0	0	1492	82	138	Cattle	85	85			85	85	I	S&H Ranches	108	20.1
Green River AMP	9002	271	159	0	2478	3316	473	2735	Cattle	97	97			437	436	I	S&H Ranches	554	20.6
Hatch-Broome-Bartholemew	1336	58	585	0	573	370	0	393	Cattle	54	54			107	107	C	S&H Ranches	138	12.5

(p) Includes 751 AUM's on Lower McCook.  
(q) Does not include Davis Canyon



# APPENDIX 12

## METHODOLOGY FOR THE ECONOMIC AND SOCIAL ANALYSIS

### Minerals Analysis

The oil shale related economic impacts are based upon the aggregate production and impacts from the Tosco, Magic Circle, Syntana, and Paraho oil shale projects, described in the Uintah Basin Synfuels Development EIS 1982; and adjusted by the oil shale production estimates for various management actions that were developed for this RMP.

The tar sands related economic impacts were based upon the production and impact estimates for the PR Spring special tar sands area described in the Utah Combined Hydrocarbon Regional Tar Sands EIS, and adjusted by the production estimates resulting from the various management actions that were developed for this RMP.

Each EIS's impact estimates were adjusted using the following ratio:

$$\frac{\text{Production estimate resulting from a management action}}{\text{Production estimate in the EIS}}$$

The resulting population estimates are given in Table 12-1 of this Appendix.

### Wildlife/Recreation Analysis

The number of days associated with hunting and recreational permits in the BCRA was established by the Vernal District Outdoor Recreation Planner in conjunction with the Utah Division of Wildlife Resources.

Expenditure information for recreation visits was calculated from Outdoor Recreation in Utah: The Economic Significance (Utah State University 1982).

### Forage Analysis

The Economic Statistics and Cooperative Service (ESCS), U.S. Department of Agriculture, collected rancher economic data for the USFS and BLM in 1979.

The forage and season of use in the Diamond Mountain Resource Area (DMRA) is similar to that of the Book Cliffs Resource Area (BCRA) and the two resource areas have 6 livestock operators in common. Because of the lack of budgets specific to the BCRA, and the similarities of resource and livestock operations between the 2 resource areas, the DMRA budgets and linear programming results were applied to the BCRA. Although operations in the BCRA tend to be slightly larger, and the analysis is one year old, this and other dissimilarities were not judged to be significant enough to invalidate the analysis.



Appendix 12 (Continued)  
Methodology for the Economic and Social Analysis

Producers using BLM forage in the Diamond Mountain Resource Area (DMRA) were stratified according to herd size, season of Federal rangeland use, and dependency on Federal lands for grazing. Average costs and returns for producers in these strata were first based upon U.S. Department of Agriculture cost of production survey data for a broad geographic area including the BCRA.

To reflect local conditions, the survey data were adjusted through local producers' panels, extension specialists, lending institutions, and universities. The final ranch budgets for the DMRA are shown in Tables 12-2, 12-3, 12-4, and 12-5 of this Appendix.

Based upon these ranch budgets, a linear programming model was developed for each rancher strata. Models were set up to maximize net income based on a series of production parameters and constraints. The amount of grazing on public lands enters the model at a constrained level equal to that used by each of the typical ranches. The BLM forage constraints were then varied to see how the typical profit-maximizing ranches would adjust to these changes. Average costs, returns, herd size, and hired labor requirements were then computed by rancher strata for 10 through 30 percent increases in available public land forage, and 10 through 50 percent decreases in available public land forage. The results of this modeling are shown in Tables 12-6, 12-7, 12-8, and 12-9 of this Appendix.

Operators in the BCRA were grouped into the same strata used in the linear programming models. Each ranch has a unique set of characteristics affecting its operation which cannot be fully represented by a ranch model. However, the ranch models can be used to estimate the aggregate impacts of changing the allocation of public land forage to those ranches in each stratum.

Impacts were estimated assuming that those operations using less than 90 percent of their full active preference would continue grazing at their 5-year average licensed use. Therefore, only when a management action reduced the level of use below an operator's 5-year average was a decrease in income recorded. This assumption tends to underestimate the rancher impacts of each alternative. Increases in forage use were recorded either when a management action would increase the forage allocated to an operator, using 90 percent or more of active preference, or anytime when a range improvement would increase available livestock forage.

The changes in forage availability were evaluated by assuming that the changes would be uniform throughout the existing period of use. Changes in season of use constrain the periods that operators can use public forage. These changes were not evaluated by ESCS or through linear program modeling. The proposed changes in season of use most consistently exclude grazing during some periods in the spring (March through May). Spring is also the period when ranchers have the fewest alternative sources of forage.



Appendix 12 (Continued)  
Methodology for the Economic and Social Analysis

The average licensed use that would be excluded during the spring under each alternative was estimated for all operators. This figure was adjusted for each alternative according to the herd size change predicted by the linear programming model. To calculate the worst-case impact of these changes, it was assumed that this forage loss would be replaced with alfalfa hay produced at \$60 per ton. It was further assumed that an animal unit month (AUM) of public forage supplied to a typical herd combination during the spring would have to be replaced with 730 pounds of alfalfa hay.

Changes in hired labor requirements were computed using the predicted expenditures for hired labor and the average income for farm laborers in Uintah County.

Direct operator income changes were calculated using linear programming estimated returns above cash cost. Indirect and induced income changes were calculated using an input-output model for Uintah-Duchesne Counties. Returns above cash cost were not used to measure induced effects, since induced impacts are determined by reportable income, which is less than returns above cash costs. Reportable income was measured from changes in livestock sales and the income-to-sales ratio in the input-output model. Indirect and induced effects were, therefore, based on changes in sales that would result from each alternative.

Although BLM does not recognize a capitalized value for grazing preferences, the market does recognize such a capitalized value whenever grazing fees are lower than their economic value (Gardner 1962). Grazing fees represent a minimum value for public forage; however, the grazing fee is not determined through the market, and it is generally agreed that the fee is lower than its true economic value (USDA, USDI 1977). Although there are numerous restrictions preventing the outright sale of permits, those in the livestock business sometimes mention grazing permit sales, and although the prices are highly variable, they are generally near the \$40 to \$80/AUM price range. Although forage quality, season of use, and added services rendered make comparisons between BLM forage and privately leased forage questionable, private lease rates still provide one of the best measures of annual value. Utah's private lease rate averaged \$7.24 per AUM in 1982 (USDA 1983). There are a number of other indications that the value of public forage in the BCRA is close to \$7.24 per AUM figure (Gee 1981, USFS 1980). With an annual permit value of \$7.24, a 5-year average grazing fee of \$1.96 (1979-1983) and a discount rate of  $7\frac{7}{8}$ , economic theory suggests that permit values would be \$69 per AUM.

### Social Analysis

The existing social conditions of communities and groups in the affected area was obtained from various published and unpublished sources. The attitudes of various groups towards each issue was obtained from the resource area specialists. These specialists live in the affected area and have worked and dealt with members of those groups who have major interest



Appendix 12 (Continued)  
Methodology for the Economic and Social Analysis

in the issues. Precise representation of the communities was not possible through this information gathering technique; however, major social concerns and effects were identified for each issue.



Appendix 12, Table 12-1  
Baseline, Interrelated and BLM Related Population Growth  
By Alternative

	1980		1985		1990		1995		2000		Resource Protection Alternative				Commodity Production Alternative				Balanced Use Alternative				
	Base	Other	Base	Other	Base	Other	Base	Other	Base	Other	1985	1990	1995	2000	1985	1990	1995	2000	1985	1990	1995	2000	
Duchesne	12,565	17,778	4,965	18,632	9,542	18,684	12,333	18,292	14,910		0	1,181	1,900	1,900	1,900	0	2,575	4,135	4,135	0	2,049	3,296	3,296
Roosevelt CCD	9,714	13,695	4,897	15,057	9,404	15,005	12,190	14,636	14,701		0	1,169	1,881	1,881	1,881	0	2,549	4,093	4,093	0	2,029	3,263	3,263
Roosevelt	3,842	5,416	3,428	5,995	6,582	5,934	8,533	5,789	10,291		0	814	1,311	1,311	1,311	0	1,759	2,824	2,824	0	1,414	2,274	2,274
Myton	500	705	171	775	329	773	427	754	515		0	35	57	57	57	0	53	85	85	0	61	99	99
Unincorp. Area	5,372	7,574	1,298	8,287	2,493	8,298	3,230	8,093	3,895		0	318	513	513	513	0	737	1,184	1,184	0	554	890	890
Duchesne & S & N																							
Duchesne CCD	2,851	4,083	68	3,575	138	3,679	143	3,656	209		0	12	19	19	19	0	26	42	40	0	20	33	33
Uintah	20,506	25,730	18,940	29,326	34,690	29,863	44,174	28,985	52,445		0	8,020	12,923	12,923	12,923	0	17,520	28,127	28,127	0	13,942	22,425	22,425
Uintah-Ouray																							
CCD	4,338	5,061	445	5,699	830	5,730	926	5,565	1,027		0	160	258	258	258	0	526	562	562	0	418	449	449
Ballard	558	775	223	966	416	976	464	926	514		0	80	129	129	129	0	175	281	281	0	139	224	224
Unincorp. Area	3,780	4,286	222	4,733	414	4,754	462	4,639	513		0	80	129	129	129	0	351	281	281	0	279	225	225
Vernal CCD	16,168	20,653	13,858	23,611	32,011	24,117	43,041	23,404	51,209		0	5,774	12,406	12,535	12,535	0	12,614	27,002	27,283	0	10,038	21,528	21,752
Vernal	6,600	9,291	6,165	11,065	13,918	11,369	18,786	10,941	22,328		0	2,566	5,557	5,686	5,686	0	5,606	12,095	12,376	0	4,461	9,642	9,867
Unincorp. Area	9,568	11,362	12,330	12,546	19,942	12,748	24,462	12,463	29,090		0	3,208	6,849	6,849	6,849	0	7,008	14,907	14,907	0	5,577	11,886	11,885
Bonanza*	16	4,637	16	1,849	16	207	16	209			0	2,086	259	130	130	0	4,380	563	280	0	3,486	448	224
Moffat-Rio Blanco	24,255	1,176	28,345	3,004	27,646	3,837	28,144	4,518			0	281	425	452	452	0	613	984	984	0	488	775	775
Dinosaur	410	501	517	405	1,367	425	1,744	437	2,055		0	124	187	187	187	0	343	551	551	0	215	440	440
Rangely	2,614	3,193	659	3,993	1,637	3,805	2,093	3,962	2,463		0	157	238	238	238	0	270	433	433	0	273	335	335
Grand	8,241	9,850	691	10,570	834	10,324	915	9,676	919		0	155	1,156	441	441	0	830	6,215	2,372	0	522	3,916	1,494
Thompson CCD	326	380	691	366	834	366	915	365	919		0	155	1,156	441	441	0	830	6,215	2,372	0	522	3,916	1,494
Moab CCD	7,915	9,470	-	10,204	-	9,958	-	9,311	-		0	-	-	-	-	0	-	-	-	0	-	-	-
Daggett Co., Utah & Mesa Co., Colo.	1,510				1,198		1,731	2,185	0	193	410	410	0	424	987	987	0	340	760	760	760	760	760

Note: Daggett County, Utah and Mesa County, Colorado are not within the affected area as the term is used in the text.

\*Bonanza does not correspond with any official census area, but is roughly the area delineated by the BCR.



# Ranch Budgets

## APPENDIX 12, TABLE 12-2

### Average Costs and Returns for Small Beef Herds (0-99 Cows)

Item	Unit	Number	Average Weight	Price Cwt	Total Value
<b>Sales:</b>					
Steer Calves	Head	20	390	\$86.13	\$ 6,718
Heifer Calves	Head	10	375	77.49	2,906
Yearling Steers	Head	--	--	--	--
Yearling Heifers	Head	3	650	65.47	1,277
Cull Cows	Head	6	850	41.27	2,105
Total					13,006
Total Per Cow					250
<b>Cash Costs:</b>					
			Value/Cow	Total Values	
BLM Grazing Fee			\$ 7.85	\$ 408	
Forest Grazing Fee			6.12	318	
Private Range Lease/Rent			9.97	518	
State Lease			1.26	65	
Hay (produce)			13.57	706	
Hay (purchase)			--	--	
Protein Supplement			--	--	
Irrigated Pasture			5.50	286	
Salt and Mineral			1.40	73	
Concentrate Feeds			--	--	
Veterinary and Medicine			3.75	195	
Hired Trucking			3.83	199	
Marketing			3.71	193	
Fuel and Lubricants			27.20	1,414	
Repairs			23.84	1,239	
Taxes			26.89	1,398	
Insurance			6.72	349	
Interest on Operating Capital			6.86	357	
General Farm Overhead			11.42	594	
Other Cash Costs			--	--	
Hired Labor			.94	49	
Total Cash Costs			160.79	8,361	
<b>Other Costs:</b>					
Family Labor			44.84	2,332	
Depreciation			49.43	2,570	
Interest on Investment Other Than Land			117.42	6,106	
Interest on Land			385.01	20,021	
Total Other Costs			596.72	31,029	
Total All Costs			\$757.50	\$39,390	

Source: Gee 82



# Ranch Budgets

## APPENDIX 12, TABLE 12-3

### Average Costs and Returns for Medium Beef Herds (100-299 Cows)

Item	Unit	Number	Average Weight	Price Cwt	Total Value
<b>Sales:</b>					
Steer Calves	Head	70	390	\$86.13	\$23,629
Heifer Calves	Head	24	375	77.49	6,974
Yearling Steers	Head	8	670	72.58	3,901
Yearling Heifers	Head	20	650	65.47	8,511
Cull Cows	Head	28	850	41.27	9,822
Total					52,832
Total Per Cow					262
<b>Cash Costs:</b>					
			Value/Cow	Total Values	
BLM Grazing Fee			\$ 3.26	\$ 655	
Forest Grazing Fee			4.44	892	
Private Range Lease/Rent			13.33	2,679	
State Lease			1.34	269	
Hay (produce)			10.72	2,155	
Hay (purchase)			4.31	866	
Protein Supplement			--	--	
Irrigated Pasture			11.70	2,352	
Salt and Mineral			1.40	281	
Concentrate Feeds			--	--	
Veterinary and Medicine			4.95	995	
Hired Trucking			1.70	342	
Marketing			2.15	432	
Fuel and Lubricants			22.33	4,488	
Repairs			21.63	4,348	
Taxes			24.16	4,856	
Insurance			6.50	1,307	
Interest on Operating Capital			8.40	1,688	
General Farm Overhead			10.05	2,020	
Other Cash Costs			--	--	
Hired Labor			13.35	2,683	
Total Cash Costs			165.72	33,308	
<b>Other Costs:</b>					
Family Labor			25.90	5,206	
Depreciation			49.00	9,849	
Interest on Investment Other Than Land			117.07	23,531	
Interest on Land			344.55	69,255	
Total Other Costs			\$536.52	\$107,841	
Total All Costs				\$141,150	

Source: Gee 82



# Ranch Budgets

## APPENDIX 12, TABLE 12-4

### Average Costs and Returns for Large Beef Herds (over 300 Cows)

Item	Unit	Number	Average Weight	Price Cwt	Total Value
<b>Sales:</b>					
Steer Calves	Head	260	390	\$86.13	\$ 87,282
Heifer Calves	Head	101	375	77.49	29,349
Yearling Steers	Head	52	670	72.58	25,287
Yearling Heifers	Head	93	650	65.47	39,577
Cull Cows	Head	119	850	41.27	41,744
Total					223,239
Total Per Cow					263
<b>Cash Costs:</b>					
			Value/Cow		Total Values
BLM Grazing Fee			\$ 2.29		\$ 1,940
Forest Grazing Fee			10.57		8,953
Private Range Lease/Rent			14.79		12,527
State Lease			1.50		1,271
Hay (produce)			10.86		9,198
Hay (purchase)			4.15		3,515
Protein Supplement			--		--
Irrigated Pasture			12.93		10,952
Salt and Mineral			1.40		1,186
Concentrate Feeds			--		--
Veterinary and Medicine			1.55		1,313
Hired Trucking			1.85		1,567
Marketing			2.10		1,779
Fuel and Lubricants			10.75		9,105
Repairs			14.38		12,180
Taxes			27.01		22,877
Insurance			6.83		5,785
Interest on Operating Capital			6.99		5,921
General Farm Overhead			7.72		6,539
Other Cash Costs			--		--
Hired Labor			18.71		15,847
Total Cash Costs			156.38		132,454
<b>Other Costs:</b>					
Family Labor			12.35		10,460
Depreciation			48.65		41,207
Interest on Investment Other Than Land			112.77		95,516
Interest on Land			321.48		272,294
Total Other Costs			\$495.25		\$419,477

Source: Gee 82



# Ranch Budgets

## APPENDIX 12, TABLE 12-5

### Average Costs and Returns for Large Sheep Herds

Item	Unit	Number	Average Weight	Price Cwt	Total Value
<b>Sales:</b>					
Slaughter Lambs	Head	1,621	93	\$66.30	\$ 99,949
Feeder Lambs	Head	835	82	73.96	50,640
Ewes	Head	278	145	26.86	10,827
Wool	Lbs.	2,831	10	.88	24,913
Wood Incentive Payment	Dol.	24,913		.39	9,716
Unshorn Lamb Payment	Cwt.	2,193		1.43	3,136
Total					199,181
Total Per <u>Sheep</u>					71

Cash Costs:	Value/Cow	Total Values
BLM Grazing Fee	\$ 1.59	\$ 4,430
Forest Grazing Fee	1.57	4,360
State Lease	.25	708
Irrigated Pasture	--	--
Private Range Lease/Rent	2.52	7,014
Hay (produce)	.51	1,417
Hay (purchase)	1.82	5,061
Grain	--	--
Protein Supplement	1.33	3,694
Other Feed	--	--
Salt and Mineral	.28	778
Spray and Dipping	.02	58
Veterinary and Medicine	.36	1,001
Marketing	.10	278
Trucking	2.44	6,783
Shearing and Tagging	1.90	5,282
Utilities	.63	1,751
Lamb Promotion	.03	83
Organizations	.10	278
Legal and Accounting	.38	1,057
Wool Storage	.08	222
Predator Control	.67	1,862
Ram Death Loss	.59	1,640
Fuel and Lubricants	1.78	4,948
Repairs	1.72	4,787
Hired Labor	3.47	9,647
Taxes	2.81	7,807
Insurance	.65	1,810
General Farm Overhead	1.19	3,308
Interest on Operating Capital	1.37	3,815
Total Cash Costs	\$30.17	\$83,878

Source: Gee 82



Appendix 12, Table 12-6

Impact Analysis on Partial Ranch Budgets for Small Cattle Operator

Item	No Change	Percent Increased			Percent Reduced					
		10	20	30	10	20	30	40	50	
		<u>Dollars</u>								
Gross Income	13,006	13,181	13,367	13,542	12,582	12,134	11,710	11,286	10,863	
Total Cash Costs	8,361	8,450	8,545	8,634	8,089	7,800	7,527	7,254	6,981	
Value of Family Labor	2,332	2,363	2,396	2,428	2,256	2,175	2,099	2,023	1,948	
Depreciation	2,570	2,576	2,582	2,587	2,556	2,542	2,528	2,514	2,501	
Interest on Investment Other Than Land	6,106	6,163	6,224	6,282	5,967	5,820	5,682	5,543	5,404	
Return Above:										
Cash Costs	4,645	4,731	4,822	4,908	4,493	4,334	4,183	4,032	4,882	
Cash Costs and Family Labor	2,313	2,368	2,426	2,480	2,237	2,159	2,084	2,009	1,934	
Return to Total Investment	-257	-208	-156	-107	-319	-383	-444	-505	-567	
Return to Land	-6,363	-6,371	-6,380	-6,389	-6,286	-6,203	-6,126	-6,048	-5,971	
		<u>Head</u>								
Herd Size	52	53	53	54	50	49	47	45	43	



## Partial Ranch Budgets and Impact Analysis for Medium Cattle Operator

490



Appendix 12, Table 12-8

Partial Ranch Budgets and Impact Analysis for Large Cattle Operator

Item	No Change	Percent Increased			Percent Reduced					
		10	20	30	10	20	30	40	50	
<u>Dollars</u>										
Gross Income	223,239	223,473	223,708	223,942	222,998	222,757	222,517	222,276	222,035	
Total Cash Costs	132,454	131,647	130,839	130,032	133,549	134,645	135,740	136,836	137,931	
Value of Family Labor	10,460	10,089	9,719	9,348	10,209	9,958	9,706	9,455	9,204	
Depreciation	41,207	40,979	40,751	40,523	41,059	40,911	40,762	40,614	40,466	
Interest on Investment Other Than Land	95,516	95,627	95,738	95,849	95,469	95,422	95,376	95,329	95,282	
Return Above:										
Cash Costs	90,785	91,827	92,868	93,910	89,449	88,113	86,776	85,440	84,104	
Cash Costs and Family Labor	80,325	81,737	83,149	84,561	78,148	75,971	73,795	71,618	69,441	
Return to Total Investment	39,118	40,758	42,398	44,038	37,089	35,061	33,032	31,004	28,975	
Return to Land	-233,176	-172,721	-112,266	-51,811	-198,710	-164,245	-129,779	-95,314	-60,848	
<u>Head</u>										
Herd Size	847	848	849	850	846	845	844	843	842	



Appendix 12, Table 12-9

Partial Ranch Budgets and Impact Analysis for Sheep Operators

Item	No Change	Percent Increased			Percent Reduced					
		10	20	30	10	20	30	40	50	
<u>Dollars</u>										
Gross Income	199,181	202,898	206,591	210,305	195,471	191,778	188,065	184,115	180,658	
Total Cash Costs	83,878	84,804	85,013	85,224	84,383	84,173	83,963	83,752	83,543	
Value of Family Labor	9,647	9,826	10,005	10,185	9,467	9,288	9,108	8,928	8,749	
Depreciation	19,774	19,812	19,851	19,889	19,736	19,697	19,659	19,621	19,582	
Interest on Investment Other Than Land	40,101	40,593	41,082	41,574	39,609	39,119	38,627	38,135	37,646	
Return Above:										
Cash Costs	115,303	118,094	121,578	125,081	111,088	107,605	104,102	100,599	97,115	
Cash Costs and Family Labor	105,656	108,268	111,573	114,896	101,621	98,317	94,994	91,671	88,366	
Return to Total Investment	85,882	88,456	91,722	95,007	81,885	78,620	75,335	72,050	68,784	
Return to Land	45,781	47,863	50,640	53,433	42,276	39,501	36,708	33,915	31,138	
<u>Head</u>										
Herd Size	2,780	2,832	2,883	2,935	2,728	2,676	2,624	2,572	2,521	



## APPENDIX 13

# PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS AND NATIONAL AMBIENT AIR QUALITY STANDARDS.

### Prevention of Significant Deterioration

The United States Environmental Protection Agency and State of Utah prevention of significant deterioration requirements both allow only a limited increase in the second-highest short-term TSP and SO<sub>2</sub> concentrations, and annual-average TSP and SO<sub>2</sub> concentrations associated with emissions from a new source. These SO<sub>2</sub> and TSP increments for each class are listed in Table 13-2.

### Ambient Air Quality Standards

The applicable State and Federal ambient air quality standards are listed. The Utah and Colorado State standards are the same as the National Ambient Air Quality Standards.

All ambient air quality standards are of potential concern; however, for the region and sources of interest, sulfur dioxide (SO<sub>2</sub>), total suspended particulates (TSP), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), and ozone (O<sub>3</sub>) are the pollutants of principal concern.

Federal, Utah, and Colorado ambient air quality standards are displayed in Table 13-1.



TABLE 13-1

Applicable State and Federal Ambient Air Quality Standards  
(micrograms per cubic meter)

<u>Pollutant</u>	<u>Federal</u>	<u>Utah</u>	<u>Colorado</u>
Sulfur Dioxide (SO <sub>2</sub> )			
(annual)	80	80	80
(24-hour)	365	365	365
(3-hour secondary)	1,300	1,300	1,300
Total Suspended Particulates (TSP)			
Primary			
(annual)	75	75	75
(24-hour)	260	260	260
Secondary			
(annual)	60	60	60
(24-hour)	150	150	150
Carbon Monoxide (CO)			
(8-hour)	10,000	10,000	10,000
(1-hour)	40,000	40,000	40,000
Ozone (O <sub>3</sub> )			
(1-hour)	240	240	240
Nitrogen Oxide (NO <sub>2</sub> )			
(annual)	100	100	100



TABLE 13-2

## Prevention of Significant Deterioration Increments

Pollutant	Averaging Time	Maximum Allowable Concentrations (ug/m3)		
		Class I	Class II	Class III
SO <sub>2</sub>	Annual	2	20	40
	24-hr	5	91	182
	3-hr	25	512	700
TSP	Annual	5	19	37
	24-hr	10	37	75



## APPENDIX 14

# ANTICIPATED TREND IN ECOLOGICAL

## CONDITIONS

### LEGEND

Apparent Trend: D = Down S = Stable U = Up

Factors Considered to Appraise and Assign Trend to Ecological Condition

1. Large amounts of nonuse = U
2. Deferment of use during the critical plant growth periods = U
3. Vegetative studies show a current downward trend = D
4. Vegetative studies show a current upward trend = U
5. Grazing system to defer use during critical plant growth periods = U
6. Current trend is static or studies are incomplete = S
7. Land treatments = U
8. Development of water to improve distribution = U
9. Ongoing field observations = U or D or S
10. Continuous season long use = D
11. Utilization and actual use studies show heavy use = D
12. Wildlife numbers are above the level allocated for wildlife = D
13. Decrease in wild horse use = U
14. Increase in wild horse use = D

Allotment Name and Number	Anticipated Trend					
	Current Apparent Trend	Management Trend	Resource Apparent Trend	Protection Trend	Commodity Apparent Trend	Balanced Use Apparent Trend
		Factors		Factors	Production Factors	Trend Factors

### BLUE MOUNTAIN LOCALITY

Blue Mountain AMP	5825	D	3, 11, 12	U	5, 7, 8	U	5, 7, 8
Cub Creek	5823	S	6	S	6	S	6
Doc's Valley	5821	S	6	U	5, 7	U	5, 7
Green River	5820	S	6	U	6	S	6
Point of Pines	5822	D	3, 11, 12	U	5, 7, 8	U	5, 7, 8
Stuntz Valley	5824	D	3, 11, 12	U	5, 7	U	5, 7, 8



# Appendix 14 (Continued)

## Anticipated Trend in Ecological Condition

Allotment Name and Number	Anticipated Trend					
	Current Management Apparent Trend	Resource Apparent Trend	Protection Trend Factors	Commodity Apparent Trend	Production Trend Factors	Balanced Use Trend Factors
BONANZA-RAINBOW LOCALITY						
Antelope Draw 5854	U	U	1, 2, 4	U	4, 5, 8, 13	4, 5, 8, 13
Asphalt Draw AMP 8817	U	U	1, 2	U	5, 8	5, 8
Badlands 5848	D	U	2	S	6	5, 8
Baerer Wash 5832	S	U	2	U	5	5, 8
Bohemian Bottoms 5840	S	U	2	S	6	6
Bonanza 5842	S	U	2	U	5	5
Brewer 8831	S	U	2	S	5	5
Cocklebur 5833	S	U	2	U	5	5
Halfway Hill 5861	S	U	2	U	5	5
Hells Hole 8819	U	U	1, 2	S	6	1-6
Jensen 5836	D	U	2	U	5, 8	5, 8
K Ranch** 5849						
Kane Hollow 5837	D	U	2	U	5, 8	5, 8
Little Emma 5852	S-U	U	2	S	6	1, 6
Miners Gulch 5838	S	U	2	S	6	6
Olsen AMP 8816	S-U	U	2	S	5, 6	1, 5, 6
Powder Wash 5857	S	U	2	U	5, 8	5, 8
Raven Ridge 5851	S	U	2	U	7	7
Sand Wash 8818	S-U	U	2	S	6	1, 6
Seven Sisters AMP 5845	S	U	2	U	5, 13	5, 13
Snake John 5860	S	U	2	U	5	5
Spring Hollow 5862	D	U	2	S	6	5, 8
Stateline 5863	S-U	U	1, 2	S	6	1-6
Stirrup AMP 5847	S	U	2	S	5, 6	5, 6

\*\*Allotment managed by Colorado



# Appendix 14 (Continued)

## Anticipated Trend in Ecological Condition

Allotment Name and Number	Anticipated Trend					
	Current Management Apparent Trend	Resource Apparent Trend	Protection Trend Factors	Commodity Apparent Trend	Production Trend Factors	Balanced Use Apparent Trend Factors
Sunday School Canyon AMP 8814	S	U	2	U	5, 8	U 5, 8
Walker Hollow AMP 5839	S	S	6	U	5, 8	U 5, 8
Watson 8815	S	U	2	S	6	S 6
West Deadman 5841	S-U	U	1, 2	S	6	S-U 1, 6
White River 8829	S	S	6	S	6	S 6
White River Bottoms 5850	S	U	2	S	6	S 6
BOOK CLIFFS LOCALITY						
Atchee Ridge AMP 8824	U	U	2, 4, 5	U	4, 5, 7, 8	U 4, 5, 7, 8
Book Cliffs Pasture 8828	S	S	6	S	6	S 6
Davis Canyon** 8823	S-U	U	1, 2	U	5, 7, 8, 13	U 5, 7, 8
Horse Point AMP 8825	S	U	2	S	6	S 6
McClelland 8826	U	U	1, 4, 5	U	5, 7, 8	U 5, 7, 8
Sweetwater AMP 8822	S	S	6	S	6	S 6
West Water Point 8833	S	U	2	U	5, 7, 13	U 5, 7, 8, 13
Winter Ridge AMP 8827	S	U	2	U	5, 7, 13	U 5, 7, 8, 13
HILL CREEK LOCALITY						
Birchell 8804	S	U	2	U	5, 7	U 5, 7
Green River AMP 8803	S	U	2	S	5, 6	S-U 5, 6

\*\*Allotment managed by Colorado



# Appendix 14 (Continued)

## Anticipated Trend in Ecological Condition

Allotment Name and Number	Current Management				Anticipated Trend				Balanced Use			
	Apparent Trend	Factors	Resource Apparent Trend	Protection Trend	Commodity Apparent Trend	Production Trend	Factors	Apparent Trend	Production Trend	Factors	Apparent Trend	Use Trend
Hatch-Broome-Bartholomew	S	6	U	2	S	6		S	6		S	6
Lower Showalter (Wild Horse Bench)	S-U	1, 6	S-U	1, 6, 14	S-U	13		S	1, 5, 14		S	1, 5, 14
Oil Shale	U	1, 6	U	1, 6	S-U	6, 13		S	6, 14		S	6, 14
Pack Mountain - Wildhorse	S	6	S-U	2	S-U	13		S	6		S	6
Santio Sibello	S	6	U	2	S	6		S	6		S	6
Tabyago	S	6	S-U	2, 14	U	7, 13		S	1, 6, 14		S	1, 6, 14
Thorne-Ute-Broome	S	6	U	2	S	6		S	6		S	6
Upper Showalter (Mustange)	S	6	U	2, 14	U	7, 13		U	1, 7, 14		U	1, 7, 14
Ute	S-U	1, 6	U	1, 2, 14	U	7, 13		S	1, 6, 14		S	1, 6, 14
West Tabyago AMP	S	6	S-U	2, 14	S-U	1, 5, 13		S-U	1, 5, 14		S-U	1, 5, 14

U = 28  
D = 0  
S = 19  
S-U = 7  
54

U = 26  
D = 0  
S = 24  
S-U = 4  
54

U = 45  
D = 0  
S = 5  
S-U = 4  
54

U = 6  
D = 7  
S = 33  
S-U = 8  
54

TOTALS



# APPENDIX 15

## FORAGE IMPACTS

Section A: Potential Acre Impacts as the Result of Minerals Development by Mineral and by Alternative  
 Section B: Potential Impacts to Livestock by Alternative, Expressed in AUMs.  
 Section C: Potential Impacts to Wildlife, by Alternative, Expressed in AUMs.

### SECTION A

### LEGEND

CM = Current Management Alternative RP = Resource Protection Alternative CP = Commodity Production Alternative BU = Balanced Use Alternative

Allotment Name and Number	Tar Sands			Oil Shale			Oil and Gas			Sand and Gravel			Gilsonite			
	CM	RP	CP	BU	CM	RP	CP	BU	CM	RP	CP	BU	CM	RP	CP	BU
BLUE MOUNTAIN LOCALITY																
Blue Mountain AMP	5825	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cub Creek	5823	0	0	0	0	0	-4	-4	-4	0	0	0	0	0	0	0
Doc's Valley	5821	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green River	5820	0	0	0	0	0	-91	-91	-91	0	0	-28	0	0	0	0
Point of Pines	5822	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stuntz Valley	5824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal		0	0	0	0	0	-95	-95	-95	0	0	-28	0	0	0	0
BONANZA-RAINBOW LOCALITY																
Antelope Draw	5854	0	0	0	0	0	-335	-335	-335	0	0	0	-5	-5	-5	-5
Asphalt Draw AMP	8817	0	0	-490	0	-506	-365	-177	-183	-183	-17	0	-18	-18	-18	-18
Badlands	5848	0	0	0	0	0	-61	-61	-61	0	0	0	0	0	0	0
Baerer Wash	5832	0	0	0	0	0	-71	-71	-71	0	0	-55	0	0	0	0
Bohemian Bottoms	5840	0	0	0	0	0	-44	-44	-44	0	0	-60	0	0	0	0
Bonanza	5842	0	0	0	0	0	-109	-109	-109	0	0	0	-13	-13	-13	-13
Brewer	8831	0	0	0	0	0	-13	-13	-13	0	0	0	0	0	0	0
Cockleburrr	5833	0	0	0	0	0	-88	-88	-88	0	0	0	0	0	0	0
Halfway Hill	5861	0	0	0	0	0	-37	-37	-37	0	0	-60	0	0	0	0



Appendix 15 (Continued)  
Forage Impacts

Allotment Name and Number	Tar Sands				Oil Shale				Oil and Gas				Sand and Gravel				Gilsonite			
	CM	RP	CP	BU	CM	RP	CP	BU	CM	RP	CP	BU	CM	RP	CP	BU	CM	RP	CP	BU
Hells Hole 8819	0	0	0	0	0	0	-13	-21	-123	-123	-123	-123	0	0	-6	-6	-4	-4	-4	-4
Jensen 5836	0	0	0	0	0	0	0	0	-30	-30	-30	-30	0	0	-60	-25	0	0	0	0
K-Ranch 5849	0	0	0	0	0	0	0	0	-21	-21	-21	-21	0	0	-6	-6	0	0	0	0
Kane Hollow 5837	0	0	0	0	0	0	0	0	-35	-35	-35	-35	0	0	-60	-30	0	0	0	0
Little Emma 5852	0	0	0	0	0	-752	-395	-633	-235	-235	-235	-235	0	0	-28	0	-18	-18	-18	-18
Miners Gulch 5838	0	0	0	0	0	0	0	0	-22	-22	-22	-22	0	0	0	0	0	0	0	0
Olsen AMP 8816	0	-150	0	0	0	-905	-395	-557	-493	-493	-493	-493	0	0	-20	0	-18	-18	-18	-18
Powder Wash 5857	0	0	0	0	0	0	0	0	-42	-42	-42	-42	0	0	-39	-30	0	0	0	0
Raven Ridge 5851	0	0	0	0	0	0	0	0	-108	-108	-108	-108	0	0	0	0	0	0	0	0
Sand Wash 8818	0	0	0	0	0	0	0	0	-260	-260	-260	-260	0	0	0	0	-18	-18	-18	-18
Seven Sisters 5845	0	0	0	0	0	0	-129	-190	-75	-75	-75	-75	0	0	-17	0	0	0	0	0
Snake John 5860	0	0	0	0	0	0	-110	-177	-44	-44	-44	-44	0	0	0	0	0	0	0	0
Spring Hollow 5862	0	0	0	0	0	0	0	0	-23	-23	-23	-23	0	0	-11	-13	0	0	0	0
Stateline 5863	0	0	0	0	0	0	-13	0	-141	-141	-141	-141	0	0	0	0	-8	-8	-8	-8
Stirrup AMP 5847	0	0	0	0	0	0	0	0	-13	-13	-13	-13	0	0	-44	-31	0	0	0	0
Sunday School Canyon AMP 8814	0	-3530	-970	0	0	0	-395	-431	-199	-199	-199	-199	0	0	0	0	0	0	0	0
Walker Hollow 5839	0	0	0	0	0	0	0	0	-46	-46	-46	-46	0	0	-17	-19	0	0	0	0
Watson 8815	0	0	0	0	0	-37	-49	-14	-38	-38	-38	-38	0	0	0	0	-6	-6	-6	-6
West Deadman 5841	0	0	0	0	0	0	0	0	-120	-120	-120	-120	0	0	0	0	0	0	0	0
White River 8829	0	0	0	0	0	0	0	0	-2	-2	-2	-2	0	0	0	0	0	0	0	0
White River Bottoms 5850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0*	0*	0	0	0	0
Subtotal	0	-4170	-970	-500	-2200	-2012	-2200	-3011	-3011	-3011	-3011	-3011	0	0	-500	-255	-108	-108	-108	-108

BOOK CLIFFS LOCALITY

Atchee Ridge AMP 8824	0	0	-4450	0	0	0	-188	0	-524	-524	-524	-524	0	0	0	0	-15	-15	-15	-15
Book Cliffs Pasture 8828	0	-1000	0	0	0	0	0	0	-25	-25	-25	-25	0	0	0	0	0	0	0	0
Davis Canyon 8823	0	0	0	0	0	0	0	0	-28	-28	-28	-28	0	0	0	0	0	0	0	0
Horse Point AMP 8825	0	0	0	0	0	0	0	0	-157	-157	-157	-157	0	0	0	0	0	0	0	0
McClelland 8826	0	0	0	0	0	0	0	0	-72	-72	-72	-72	0	0	0	0	0	0	0	0
Sweetwater AMP 8822	0	-2170	-7910	-5600	0	0	0	0	-451	-451	-451	-451	0	0	0	0	0	0	0	0

\*Sand and gravel impacts for the White River Bottoms Allotment are included in the Asphalt Draw, Hells Hole, Little Emma, Olsen, and Seven Sisters Allotments.



Appendix 15 (Continued)  
Forage Impacts

Allotment Name and Number	Tar Sands			Oil Shale				Oil and Gas				Sand and Gravel				Gilsonite				
	CM	RF	CP	BU	CM	RP	CP	BU	CM	RP	CP	BU	CM	RP	CP	BU	CM	RP	CP	BU
West Water Point	8833	0	0	0	0	0	0	0	-27	-27	-27	-27	0	0	0	0	0	0	0	0
Winter Ridge	8827	0	-10	-4730	-6	0	0	0	-161	-161	-161	-161	0	0	0	0	0	0	0	0
Subtotal		0	-2180	-18090	-5606	0	0	-188	0	-1445	-1445	-1445	0	0	0	0	-15	-15	-15	-15
HILL CREEK LOCALITY																				
Birchell	8804	0	0	0	0	0	0	0	-8	-8	-8	-8	0	0	0	0	-7	-7	-7	-7
Green River AMP	8803	0	0	0	0	0	0	0	-43	-43	-43	-43	0	0	0	-22	0	-1	-1	-1
Hatch-Broome-																				
Bartholomew	8805	0	0	0	0	0	0	0	-6	-6	-6	-6	0	0	0	0	0	0	0	0
Lower Showalter																				
(Wild Horse Bench)	8811	0	0	0	0	0	0	0	-88	-88	-88	-88	0	0	0	0	0	0	0	0
Oil Shale	8813	0	0	0	0	0	0	0	-69	-69	-69	-69	0	0	0	0	0	0	0	0
Pack Mountain -																				
Wildhorse	8808	0	0	0	0	0	0	0	-102	-102	-102	-102	0	0	0	0	-3	-3	-3	-3
Santio Sibello	8806	0	0	0	0	0	0	0	-11	-11	-11	-11	0	0	0	0	0	0	0	0
Tabyago	8801	0	0	0	0	0	0	0	-51	-51	-51	-51	0	0	0	0	-1	-1	-1	-1
Thorne-Ute-																				
Broome	8812	0	0	0	0	0	0	0	-17	-17	-17	-17	0	0	0	0	0	0	0	0
Upper Showalter																				
(Mustange)	8810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ute	8809	0	0	0	0	0	0	0	-32	-32	-32	-32	0	0	0	0	0	0	0	0
West Tabyago AMP	8807	0	0	0	0	0	0	0	-22	-22	-22	-22	0	0	0	0	0	0	0	0
Subtotal		0	0	0	0	0	0	0	-449	-449	-449	-449	0	0	0	-22	0	-12	-12	-12
TOTALS		0	-2180	-22260	-6576	0	-2200	-2200	-5000	-5000	-5000	-5000	0	0	0	-550	-250	-135	-135	-135



## SECTION B

Potential Impacts to Livestock by Alternatives  
Expressed in AUMsCurrent Management Alternative  
Average Impacts

## Livestock AUM's

Allotment Name and Number	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gilsonite	Total Mineral Impacts	Land Treatments	AUM's for Wild-Horses	AUM's From Wildlife	Adjusted life	Change in AUM's	Percent of Change
BLUE MOUNTAIN LOCALITY												
Blue Mountain AMP	5825	0	0	0	0	0	0	0	0	0	0	0
Cub Creek	5823	0	0	0	0	0	0	0	0	0	0	0
Doc's Valley	5821	0	0	0	0	0	0	0	0	0	0	0
Green River	5820	0	-7	0	0	-7	0	0	0	-7	<1	<1
Point of Pines	5822	0	0	0	0	0	0	0	0	0	0	0
Stuntz Valley	5824	0	0	0	0	0	0	0	0	0	0	0
Subtotal		0	-7	0	0	-7	0	0	0	-7	<1	<1
BONANZA-RAINBOW LOCALITY												
Antelope Draw	5854	0	-27	0	0	-27	0	0	0	-27	<1	<1
Asphalt Draw AMP	881	0	-20	0	-2	-22	0	0	0	-22	<1	<1
Badlands	5848	0	-4	0	0	-4	0	0	0	-4	<1	<1
Baerer Wash	5832	0	-6	0	0	-6	0	0	0	-6	<1	<1
Bohemian Bottoms	5840	0	-3	0	0	-3	0	0	0	-3	<1	<1
Bonanza	5842	0	-9	0	-1	-10	0	0	0	-10	<1	<1



## SECTION B

## Current Management Alternative

Allotment Name and Number	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gil-site	Total Mineral Impacts	Land Treatments	AUM's for Wild-Horses	AUM's From Wild-life	Adjusted in	Total Change in	Percent of AUM's Change
Brewer	8831	0	0	0	0	0	0	0	0	0	0	0
Cocklebur	5833	0	0	0	0	-6	0	0	0	-6	-6	<1
Halfway Hill	5861	0	0	0	0	-3	0	0	0	-3	-3	<1
Hells Hole	8819	0	0	0	-1	-20	0	0	0	-20	-20	<1
Jensen	5836	0	0	0	0	-3	0	0	0	-3	-3	<1
K-Ranch	5849	0	0	0	0	-1	0	0	0	-1	-1	<1
Kane Hollow	5837	0	0	0	0	-2	0	0	0	-2	-2	<1
Little Emma	5852	0	0	0	-5	-27	0	0	0	-27	-27	<1
Miners Gulch	5838	0	0	0	0	-1	0	0	0	-1	-1	<1
Olsen AMP	8816	0	0	0	-2	-46	0	0	0	-46	-46	<1
Powder Wash	5857	0	0	0	0	-10	0	0	0	-10	-10	<1
Raven Ridge	5851	0	0	0	0	-5	0	0	0	-5	-5	<1
Sand Wash	8818	0	0	0	-1	-35	0	0	0	-35	-35	<1
Seven Sisters	5845	0	0	0	0	-9	0	0	0	-9	-9	<1
Snake John	5860	0	0	0	0	-6	0	0	0	-6	-6	<1
Spring Hollow	5862	0	0	0	0	-2	0	0	0	-2	-2	<1
Stateline	5863	0	0	0	-1	-13	0	0	0	-13	-13	<1
Stirrup AMP	5847	0	0	0	0	-2	0	0	0	-2	-2	<1
Sunday School												
Canyon AMP	8814	0	0	0	0	-12	0	0	0	-12	-12	<1
Walker Hollow	5839	0	0	0	0	-4	0	0	0	-4	-4	<1
Watson	8815	0	0	0	-1	-7	0	0	0	-7	-7	<1
West Deadman	5841	0	0	0	0	-9	0	0	0	-9	-9	<1
White River	8829	0	0	0	0	-1	0	0	0	-1	-1	<1
White River												
Bottoms	5850	0	0	0	0	0	0	0	0	0	0	0
Subtotal		0	0	0	-14	-296	0	0	0	-296	-296	<1



## SECTION B

## Current Management Alternative

Allotment Name and Number	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gil-son-ite	Total Mineral Impacts	Land Treatments	AUM's for Wild-Horses	AUM's From Wild-life	Total Adjusted in AUM's	Percent of Change
BOOK CLIFFS LOCALITY											
Atchee Ridge AMP	8824	0	0	-41	0	-1	-42	0	0	-42	<1
Book Cliffs											
Pasture	8828	0	0	-1	0	0	-1	0	0	-1	<1
Davis Canyon	8823	0	0	-2	0	0	-2	0	0	-2	<1
Horse Point AMP	8825	0	0	-11	0	0	-11	0	0	-11	<1
McClelland	8826	0	0	-7	0	0	-7	0	0	-7	<1
Sweetwater AMP	8822	0	0	-38	0	0	-38	0	0	-38	<1
West Water Point	8833	0	0	-2	0	0	-2	0	0	-2	<1
Winter Ridge	8827	0	0	-9	0	0	-9	0	0	-9	<1
Subtotal		0	0	-111	0	-1	-112	0	0	-112	<1
HILL CREEK LOCALITY											
Birchell	8804	0	0	0	0	0	0	0	0	0	0
Green River AMP	8803	0	0	-2	0	0	-2	0	0	-2	<1
Hatch-Broome-											
Bartholomew	8805	0	0	0	0	0	0	0	0	0	0
Lower Showalter											
(Wild Horse Bench)	8811	0	0	-7	0	0	-7	0	0	-7	<1
Oil Shale	8813	0	0	-5	0	0	-5	0	0	-5	<1
Pack Mountain -											
Wildhorse	8808	0	0	-8	0	0	-8	0	0	-8	<1
Santio Sibello	8806	0	0	0	0	0	0	0	0	0	0
Tabyago	8801	0	0	-5	0	0	-5	0	0	-5	<1
Thorne-Ute-											
Broome	8812	0	0	-1	0	0	-1	0	0	-1	<1



## SECTION B

## Current Management Alternative

Allotment Name and Number	Tar Sands	Oil and Gas	Sand and Gravel	Gilsonite	Total Mineral Impacts	Land Treatments	AUM's for Wild-Horses	AUM's From Wildlife Adjusted	Total Change in AUM's	Percent of AUM's Change
Upper Showalter (Mustange)	8810	0	0	0	0	0	0	0	0	0
Ute	8809	0	0	0	-7	0	0	0	-7	<1
West Tabyago AMP	8807	0	0	0	-2	0	0	0	-2	<1
Subtotal		0	0	0	-37	0	0	0	-37	<1
TOTALS		0	0	-15	-452	0	0	0	-452	<1



## SECTION B

## Resource Protection Alternative

Allotment Name and Number	Tar Sands	Oil and Shale	Oil and Gas	Sand and Gravel	Gil-site	Total Mineral Impacts	Land Treatments	Livestock Decreases* AUM's	Change in AUM's	Percent of Change
BLUE MOUNTAIN LOCALITY										
Blue Mountain AMP	5825	0	0	0	0	0	0	-124	-124	42
Cub Creek	5823	0	0	0	0	0	0	-10	-10	18
Doc's Valley	5821	0	0	0	0	0	0	-407	-407	22
Green River	5820	0	0	-7	0	-7	0	-1009	-1016	72
Point of Pines	5822	0	0	0	0	0	0	-285	-285	20
Stuntz Valley	5824	0	0	0	0	0	0	-268	-268	20
Subtotal		0	0	-7	0	-7	0	-2103	-2110	36
BONANZA-RAINBOW LOCALITY										
Antelope Draw	5854	0	0	-27	0	-27	0	-3187	-3214	55
Asphalt Draw AMP	8817	0	-57	-20	0	-79	0	-2213	-2292	53
Badlands	5848	0	0	-4	0	-4	0	-367	-371	48
Baerer Wash	5832	0	0	-6	0	-6	0	-416	-422	34
Bohemian Bottoms	5840	0	0	-3	0	-3	0	-38	-41	7
Bonanza	5842	0	0	-9	0	-10	0	-480	-490	25
Brewer	8831	0	0	0	0	0	0	-30	-30	25
bCocklebur	5833	0	0	-6	0	-6	0	-897a	-903	52
dHalfway Hill	5861	0	0	-3	0	-3	0	-93	-96	17
Hells Hole	8819	0	0	-19	0	-20	0	-2672	-2692	67
dJensen	5836	0	0	-3	0	-3	0	-314a	-317	46
dK-Ranch	5849	0	0	-1	0	-1	0	-	-1	<1
Kane Hollow	5837	0	0	-2	0	-2	0	-69	-71	17
Little Emma	5852	0	-69	-22	0	-96	0	-1716	-1812	40



## SECTION B

## Resource Protection Alternative

Allotment Name and Number	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gil-site	Total Mineral Impacts	Land Treatments	Livestock Decreases* AUM's	Change in AUM's	Percent of Change
dminers Gulch	5838	0	0	-1	0	-1	0	-121 <sup>a</sup>	-122	79
Olsen AMP	8816	0	-81	-44	-2	-127	0	-6673	-6800	74
cpowder Wash	5857	0	0	-10	0	-10	0	-617 <sup>a</sup>	-627	30
Raven Ridge	5851	0	0	-5	0	-5	0	-282	-287	26
Sand Wash	8818	0	0	-34	-1	-35	0	-5477	-5512	78
Seven Sisters	5845	0	0	-9	0	-9	0	-899	-908	47
Snake John	5860	0	0	-6	0	-6	0	-347	-353	30
Spring Hollow	5862	0	0	-2	0	-2	0	-136	-224	50
Stateline	5863	0	0	-12	-1	-13	0	-1446	-1459	58
Stirrup AMP	5847	0	0	-2	0	-2	0	-75	-77	19
Sunday School										
Canyon AMP	8814	0	0	-12	0	-12	0	-1206	-1218	32
Walker Hollow	5839	0	0	-4	0	-4	0	-32	-36	5
Watson	8815	0	-6	-6	-1	-13	0	-210	-223	18
West Deadman	5841	0	0	-9	0	-9	0	-1044	-1053	54
White River	8829	0	0	-1	0	-1	0	0	-1	<1
White River										
Bottoms	5850	0	0	0	0	0	0	-480	-480	100
Subtotal		0	-213	-282	-14	-509	0	-31537	-32132	52
BOOK CLIFFS LOCALITY										
Atchee Ridge AMP	8824	0	0	-41	-1	-42	+23	-2963	-2982	32
Book Cliffs										
Pasture	8828	0	0	-1	0	-1	0	-1	-2	<1
Davis Canyon	8823	0	0	-2	0	-2	0	-	-2	<1
Horse Point AMP	8825	0	0	-11	0	-11	+50	-1179	-1140	49
McClelland	8826	0	0	-7	0	-7	0	-369	-376	27
Sweetwater AMP	8822	-184	0	-38	0	-222	+395	-2223	-2050	28



## SECTION B

## Resource Protection Alternative

Allotment Name and Number	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gil- ite	Total Mineral Impacts	Land Treat- ments	Livestock Decreases* AUM's	Change in AUM's	Percent of Change
West Water Point 8833	0	0	-2	0	0	-2	0	-77	-79	19
Winter Ridge 8827	-10	0	-9	0	0	-19	+15	-1127	-1131	57
Subtotal	-194	0	-111	0	-1	-306	+483	-7939	-7762	34
HILL CREEK LOCALITY										
Birchell 8804	0	0	0	0	0	0	0	-85	-85	100
Green River AMP 8803	0	0	-2	0	0	-2	0	-435	-437	100
Hatch-Broome- Bartholomew 8805	0	0	0	0	0	0	0	-54	-54	50
Lower Showalter (Wild Horse Bench) 8811	0	0	-7	0	0	-7	0	-1458	-1465	97
Oil Shale 8813	0	0	-5	0	0	-5	0	-1093	-1098	100
Pack Mountain - Wildhorse 8808	0	0	-8	0	0	-8	0	-580	-588	33
Santio Sibello 8806	0	0	0	0	0	0	0	-16	-16	17
Tabyago 8801	0	0	-5	0	0	-5	0	-1198	-1203	40
Thorne-Ute- Broome 8812	0	0	-1	0	0	-1	0	-124	-125	50
Upper Showalter (Mustange) 8810	0	0	0	0	0	0	0	-332	-332	83
Ute 8809	0	0	-7	0	0	-7	0	-1057	-1064	73
West Tabyago AMP 8807	0	0	-2	0	0	-2	0	-1110	-1112	76
Subtotal	0	0	-37	0	0	-37	0	-7549	-7586	60
TOTALS	-194	-213	-437	0	-15	-859	+483	-49121	-49583	



- aIncludes changes from Appendix 5 (Forage Actions by Alternative) for deer populations in herd unit 26.
- bPart of deer herd unit 26 falls within the Bonanza area.
- cThirty percent of this allotment is included within deer herd unit 26.
- dTwenty percent of this allotment is included within deer herd unit 26.
- eThis allotment falls within deer herd unit 26.

\*These decreases are to improve ecological condition through reduced spring grazing, to allocate forage for wild horses, to provide forage for present and potential wildlife, to improve riparian habitat, and 100-year floodplain and to limit livestock to average use (see Appendix 5, Forage Actions by Alternative).



## SECTION B

Commodity Production Alternative  
Average ImpactsLivestock AUM's

Allotment Name and Number	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gil-son-ite	Total Mineral Impacts	Land Treat-ments	AUM's for Wild-Horses	AUM's From Wild-life	Total Adj-Change in AUM's	Percent of AUM's Change
BLUE MOUNTAIN LOCALITY											
Blue Mountain AMPa	5825	0	0	0	0	0	+140 <sup>b</sup>	0	0	+140	48
Cub Creek	5823	0	0	0	0	0	0	0	+9	+9	16
Doc's Valley	5821	0	0	0	0	0	+442 <sup>b</sup>	0	0	+442	36
Green River	5820	0	0	-7	-2	-9	0	0	+56	+47	3
Point of Pines	5822	0	0	0	0	0	0 <sup>b</sup>	0	0	0	0
Stuntz Valley	5824	0	0	0	0	0	0 <sup>b</sup>	0	0	0	0
Subtotal		0	0	-7	-2	-9	+582 <sup>b</sup>	0	+65	+638	11
BONANZA-RAINBOW LOCALITY											
Antelope Draw	5854	0	0	-27	0	0	0	0	+27	0	0
Asphalt Draw AMP	8817	-55	-41	-20	-2	-120	0	0	+260	+140	3
Badlands	5848	0	0	-4	0	-4	0	0	+4	0	0
Baerer Wash	5832	0	0	-6	-5	-11	0	0	+11	0	0
Bohemian Bottoms	5840	0	0	-3	-4	-7	0	0	+7	0	0
Bonanza	5842	0	-13	-9	0	-23	0	0	+23	0	0
Brewer	8831	0	0	0	0	0	0	0	+2	+2	<1
Cockleburrr	5833	0	0	-6	0	-6	0	0	+6	0	0
Halfway Hill	5861	0	0	-3	-4	-7	0	0	+7	0	0
Hells Hole	8819	0	-2	-19	-1	-23	0	0	+23	0	0
Jensen	5836	0	0	-3	-7	-10	0	0	+10	0	0
K-Ranch	5849	0	0	-1	0	-1	0	0	+1	0	0
Kane Hollow	5837	0	0	-2	-3	-5	0	0	+5	0	0



## SECTION B

## Commodity Production Alternative

Allotment Name and Number	Tar	Oil and Shale	Oil and Gas	Sand and Gravel	Gil-son-ite	Total Mineral Impacts	Land Treat-ments	AUM's for Wild-Horses	AUM's From Wild-life	Adjusted in AUM's	Total Change in AUM's	Percent of Change
Little Emma	5852	0	-36	-22	-3	-5	-66	0	+66	0	0	0
Miners Gulch	5838	0	0	-1	0	0	-1	0	+1	0	0	0
Olsen AMP	881	-13	-35	-44	-2	-2	-96	0	+422	+326	4	4
Powder Wash	5857	0	0	-10	-4	0	-14	0	+14	0	0	0
Raven Ridge	5851	0	0	-5	0	0	-5	0	0	+63	6	6
Sand Wash	8818	0	-25	-34	0	-2	-61	0	+170	+109	2	2
Seven Sisters	5845	0	-13	-9	-2	0	-24	0	+24	0	0	0
Snake John	5860	0	0	-6	0	0	-6	0	+6	0	0	0
Spring Hollow	5862	0	0	-2	-1	0	-3	0	+3	0	0	0
Stateline	5863	0	-1	-12	0	-1	-14	0	+14	0	0	0
Stirrup AMP	5847	0	0	-2	-7	0	-9	0	+9	0	0	0
Sunday School												
Canyon AMP	8814	-222	0	-12	0	0	-234	0	+256	+22	<1	<1
Walker Hollow	5839	0	0	-4	-1	0	-5	0	+5	0	0	0
Watson	8815	0	0	-6	0	-1	-7	0	+48	+41	3	3
West Deadman	5841	0	0	-9	0	0	-9	0	+9	0	0	0
White River	8829	0	0	-1	0	0	-1	0	+1	0	0	0
White River												
Bottoms	5850	0	0	0	0	0	0	0	0	0	0	0
Subtotal		-290	-166	-282	-46	-15	-799	+68	+1434	+703	1	1

## BOOK CLIFFS LOCALITY

Atchee Ridge AMP	8824	-350	0	-41	0	-1	-392	+770	0	+1924	+2302	24
Book Cliffs												
Pasture	8828	-58	0	-1	0	0	-59	0	+60	+1	<1	<1
Davis Canyon	8823	0	0	-2	0	0	-2	0	+2	0	0	0
Horse Point AMP	8825	0	0	-11	0	0	-11	+503	+675	+996	42	42
McClelland	8826	0	0	-7	0	0	-7	0	+7	0	0	0



## SECTION B

## Commodity Production Alternative

Allotment Name and Number	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gilsonite	Total Mineral Impacts	Land Treatments	AUM's for Wild-Horses	AUM's			
									From Wild-life	Adjusted in	Total Change Percent of	
HILL CREEK LOCALITY												
Sweetwater AMP	8822	-670	0	-38	0	0	-708	+383	0	+1864	+1539	21
West Water Point	8833	0	0	-2	0	0	-2	0	0	+2	0	0
Winter Ridge	8827	-277	0	-9	0	0	-286	+180	0	+480	+374	19
Subtotal		-1355	0	-111	0	-1	-1467	+1836	-171	+5014	+5212	23
HILL CREEK LOCALITY												
Birchell	8804	0	0	0	0	0	0	+8	0	0	+8	9
Green River AMP	8803	0	0	-2	-1	0	-3	0	0	+3	0	0
Hatch-Broome-												
Bartholomew	8805	0	0	0	0	0	0	0	0	0	0	0
Lower Showalter												
(Wild Horse Bench)	8811	0	0	-7	0	0	-7	0	0	+7	0	0
Oil Shale	8813	0	0	-5	0	0	-5	0	0	+5	0	0
Pack Mountain -												
Wildhorse	8808	0	0	-8	0	0	-8	0	0	+8	0	0
Santio Sibello	8806	0	0	0	0	0	0	0	0	0	0	0
Tabyago	8801	0	0	-5	0	0	-5	+50	-140	+95	0	0
Thorne-Ute-												
Broome	8812	0	0	-1	0	0	-1	0	0	+1	0	0
Upper Showalter												
(Mustange)	8810	0	0	0	0	0	0	+92	-117	+25	0	0
Ute	8809	0	0	-7	0	0	-7	+41	-24	0	+10	<1
West Tabyago AMP	8807	0	0	-2	0	0	-2	+125	-258	+135	0	0
Subtotal		0	0	-37	-1	0	-38	+316	-539	+279	+18	<1
TOTALS		-1645	-166	-437	-49	-16	-2313	+2802	-710	+7186	+6571	7

aThe Blue Mountain AMP currently authorizes 140 AUM's above adjudicated AUM's on a temporary non-renewable basis.

bThere would be an unknown amount of forage increase. Land treatments would be similar to amounts treated at the time of adjudication (Blue Mountain Locality).



## SECTION B

Balanced Use Alternative  
Average ImpactsLivestock AUM's

Allotment Name and Number	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gilsonite	Total Mineral Impacts	Land Treatments	AUM's for Wild-Horses	AUM's From Wildlife	Total Adjusted in AUM's	Percent of Change

## BLUE MOUNTAIN LOCALITY

Blue Mountain AMP	5825	0	0	0	0	0	+33e	0	0	+33a	0
Cub Creek	5823	0	0	0	0	0	0	0	-1	-1a	2
Doc's Valley	5821	0	0	0	0	0	0e	0	0	0a	0
Green River	5820	0	0	-7	0	0	-7	0	-97	-104	7
Point of Pines	5822	0	0	0	0	0	0e	0	-4	-4a	3
Stuntz Valley	5824	0	0	0	0	0	0e	0	0	0a	0
Subtotal		0	0	-7	0	0	-7	0	-102	-76a	1

## BONANZA-RAINBOW LOCALITY

Antelope Draw	5854	0	0	-27	0	0	-27	0	-2579	-2606	45
Asphalt Draw AMP	8817	0	-20	-20	0	-2	-42	0	-1639	-1681	39
Badlands	5848	0	0	-4	0	0	-4	0	-35	-39	5
Baerer Wash	5832	0	0	-6	-3	0	-9	0	-132	-141	11
Bohemian Bottoms	5840	0	0	-3	-2	0	-5	0	0	-5	<1
Bonanza	5842	0	0	-9	0	-1	-10	0	-115	-125	6
Brewer	8831	0	0	0	0	0	0	0	0	0	0
dCocklebur	5833	0	0	-6	0	0	-6	0	-573	-579a	33
dHalfway Hill	5861	0	0	-3	-2	0	-5	0	0	-5	<1
Hells Hole	8819	0	-3	-19	-1	-1	-24	0	-2479	-2503	62
dJensen	5836	0	0	-3	-3	0	-6	0	-1	-7a	1
dK-Ranch	5849	0	0	-1	-2	0	-3	0	-	-3	1



## SECTION B

## Balanced Use Alternative

Allotment Name and Number	Tar Sands	Oil and Gas	Oil and Gas	Sand and Gravel	Gil-sonite	Total Mineral Impacts	Land Treatments	AUM's for Wild-Horses	AUM's From Wild-life	Total Change in AUM's	Percent of AUM's Change
Kane Hollow	5837	0	0	-2	0	-4	0	0	-45	-49	11
Little Emma	5852	0	-58	-22	-5	-85	0	0	-924	-1009	22
dMiners Gulch	5838	0	0	-1	0	-1	0	0	-53a	-54	35
Olsen AMP	8816	0	-50	-44	-2	-96	0	0	-5768	-5864	64
cpowder Wash	5857	0	0	-10	0	-13	0	0	-182a	-195	9
Raven Ridge	5851	0	0	-5	0	-5	+68	0	-74	-11	<1
Sand Wash	8818	0	-25	-34	-2	-61	0	0	-5106	-5167	74
Seven Sisters	5845	0	-22	-9	0	-31	0	0	-766	-797	42
Snake John	5860	0	0	-6	0	-6	0	0	-145	-151	13
Spring Hollow	5862	0	0	-2	0	-3	0	0	0	-3	<1
Stateline	5863	0	0	-12	-1	-13	0	0	-1258	-1271	51
Stirrup AMP	5847	0	0	-2	0	-7	0	0	0	-7	2
Sunday School											
Canyon AMP	8814	-61	-27	-12	0	-100	0	0	-679	-779	21
Walker Hollow	5839	0	0	-4	-1	-5	0	0	-27	-32	4
Watson	8815	0	-2	-6	0	-9	0	0	0	-9	<1
West Deadman	5841	0	0	-9	0	-9	0	0	-838	-847	44
White River	8829	0	0	-1	0	-1	0	0	0	-1	<1
White River											
Bottoms	5850	0	0	0	0	0	0	0	-1	-1	<1
Subtotal		-61	-207	-282	-25	-590	+68	0	-23315	-23837	39
BOOK CLIFFS LOCALITY											
Atchee Ridge AMP	8824	0	0	-41	0	-42	+42	0	-2373	-2373	25
Book Cliffs											
Pasture	8828	0	0	-1	0	-1	0	0	0	-1	<1
Davis Canyon	8823	0	0	-2	0	-2	0	0	-	-2	<1
Horse Point AMP	8825	0	0	-11	0	-11	+182	-171	-948	-948	40



## SECTION B

## Balanced Use Alternative

Allotment Name and Number	Tar Sands	Oil and Shale Gas	Oil and Gas	Sand and Gravel	Gil-site and sonite	Total Mineral Impacts	Land Treatments	AUM's for Wild-Horses	AUM's			Percent of Change
									From Wild-life	Adjusted in AUM's	Total Change in AUM's	
McClelland	8826	0	0	-7	0	0	-7	0	-166	-173	12	
Sweetwater AMP	8822	-475	0	-38	0	0	-513	+230	0	-1171	-1454	20
West Water Point	8833	0	0	-2	0	0	-2	0	-75	-77	18	
Winter Ridge	8827	-1	0	-9	0	0	-10	+10	0	-797	-797	40
Subtotal		-476	0	-111	0	-1	-588	+464	-171	-5530	-5825	26
HILL CREEK LOCALITY												
Birchell	8804	0	0	0	0	0	0	0	0	0	0	0
Green River AMP	8803	0	0	-2	0	0	-2	0	0	0	-2	<1
Hatch-Broome-												
Bartholomew	8805	0	0	0	0	0	0	0	0	0	0	0
Lower Showalter												
(Wild Horse Bench)	8811	0	0	-7	0	0	-7	0	-180	-1271	-1458	97
Oil Shale	8813	0	0	-5	0	0	-5	0	-90	-1003	-1098	100
Pack Mountain -												
Wildhorse	8808	0	0	-8	0	0	-8	0	-120	-319	-447	56
Santio Sibello	8806	0	0	0	0	0	0	0	0	0	0	0
Tabyago	8801	0	0	-5	0	0	-5	0	-660	-333	-998	33
Thorne-Ute-												
Broome	8812	0	0	-1	0	0	-1	0	0	0	-1	<1
Upper Showalter												
(Mustange)	8810	0	0	0	0	0	0	+42	-180	-127	-265	67
Ute	8809	0	0	-7	0	0	-7	0	-216	-753	-976	67
West Tabyago AMP	8807	0	0	-2	0	0	-2	0	-720	-224	-946	39
Subtotal		0	0	-37	0	0	-37	+42	-2166	-4030	-6191	50
TOTALS		-537	-207	-437	-25	-16	-1222	+574	-2337	-32977	-35962	35



- aIncludes changes from Appendix 5 (Forage Actions by Alternative) for deer populations (herd unit 26). Part of deer herd unit 26 falls within the Bonanza area.
- bThirty percent of this allotment is included within deer herd unit 26.
- cTwenty percent of this allotment is included within deer herd unit 26.
- dThis allotment falls within deer herd unit 26.
- eThere would be an unknown amount of forage increase. Treatment would be similar to amounts treated and accounted for at the time of adjudication in the Blue Mountain Locality.



## SECTION C

Potential Impacts to Wildlife by Alternative  
Expressed in AUMs

ALTERNATIVE LOCALITY	Tar Sands	Oil Shale	Oil and Gas	Sand and Gravel	Gilsonite	Total Mineral Impacts	Land Treatments	From Adjudicated AUMs	Total Change
CURRENT MANAGEMENT ALTERNATIVE									
Blue Mountain	0	0	0	0	0	0	0	0	0
Bonanza-Rainbow	0	0	-12	0	0	-12	0	0	-12
Book Cliffs	0	0	-111	0	-1	-112	+300	0	+188
Hill Creek	0	0	0	0	0	0	0	0	0
TOTAL	0	0	-123	0	-1	-124	+300	0	+176
RESOURCE PROTECTION ALTERNATIVE									
Blue Mountain	0	0	0	0	0	0	0	+885	+885
Bonanza-Rainbow	0	-12	-13	0	0	-25	0	+24,226	+24,201
Book Cliffs	-185	0	-111	0	-1	-297	+1,225	+5,823	+6,751
Hill Creek	0	0	0	0	0	0	0	+6,183	+6,183
TOTAL	-185	-12	-124	0	-1	-322	+1,225	+37,117	+38,020
COMMODITY PRODUCTION ALTERNATIVE									
Blue Mountain	0	0	-1	0	0	-1	0	-65	-66
Bonanza-Rainbow	-35	-12	-13	0	0	-60	0	-1,434	-1,489
Book Cliffs	-1,355	-15	-111	0	-1	-1,482	0	-5,471	-6,682
Hill Creek	0	0	0	0	0	0	0	-279	-279
TOTAL	-1,390	-27	-125	0	-1	-1,543	0	-7,643	-9,181
BALANCED USE ALTERNATIVE									
Blue Mountain	0	0	-1	0	0	-1	+510	+102	+611
Bonanza-Rainbow	-20	-15	-13	0	0	-48	0	+23,315	+23,256
Book Cliffs	-475	0	-111	0	-1	-587	+942	+5,530	+5,885
Hill Creek	0	0	0	0	0	0	+8	+4,030	+4,038
TOTAL	-495	-15	-125	0	-1	-636	+1,460	+32,977	+33,8015

\*There would be an unknown additional increase. Treatments would be similar to amounts treated and accounted for at the time of adjudication in the Blue Mountain Locality.



# APPENDIX 16

## ANTICIPATED CHANGE IN ECOLOGICAL CONDITION CLASS

	% Excellent	% Good	% Fair	% Poor	% Badland & Rock Outcrop
<b>BLUE MOUNTAIN LOCALITY</b>					
83' Inventory Baseline	5	54	21	2	18
Current Management Alternative	5	45	30	2	18
Resource Protection Alternative	6	62	12	2	18
Commodity Production Alternative	8	55	17	2	18
Balanced Use Alternative	13	55	13	1	18
<b>BONANZA RAINBOW LOCALITY</b>					
83' Inventory Baseline	4	39	41	1	15
Current Management Alternative	4	42	38	1	15
Resource Protection Alternative	4	49	31	1	15
Commodity Production Alternative	3	40	40	1	15
Balanced Use Alternative	4	44	36	1	15
<b>BOOK CLIFFS LOCALITY</b>					
83' Inventory Baseline	15	57	20	0	8
Current Management Alternative	16	58	18	0	8
Resource Protection Alternative	21	59	12	0	8
Commodity Production Alternative	15	60	17	0	8
Balanced Use Alternative	19	60	13	0	8
<b>HILL CREEK LOCALITY</b>					
83' Inventory Baseline	3	50	25	3	19
Current Management Alternative	3	51	23	3	19
Resource Protection Alternative	3	53	22	3	19
Commodity Production Alternative	3	53	23	2	19
Balanced Use Alternative	3	51	24	3	19
<b>TOTAL OF ALL LOCALITIES</b>					
83' Inventory Baseline	7	46	32	1	14
Current Management Alternative	7	48	30	1	14
Resource Protection Alternative	8	53	24	1	14
Commodity Production Alternative	7	47	31	1	14
Balanced Use Alternative	7	50	28	1	14



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Final Book Cliffs resource  
management







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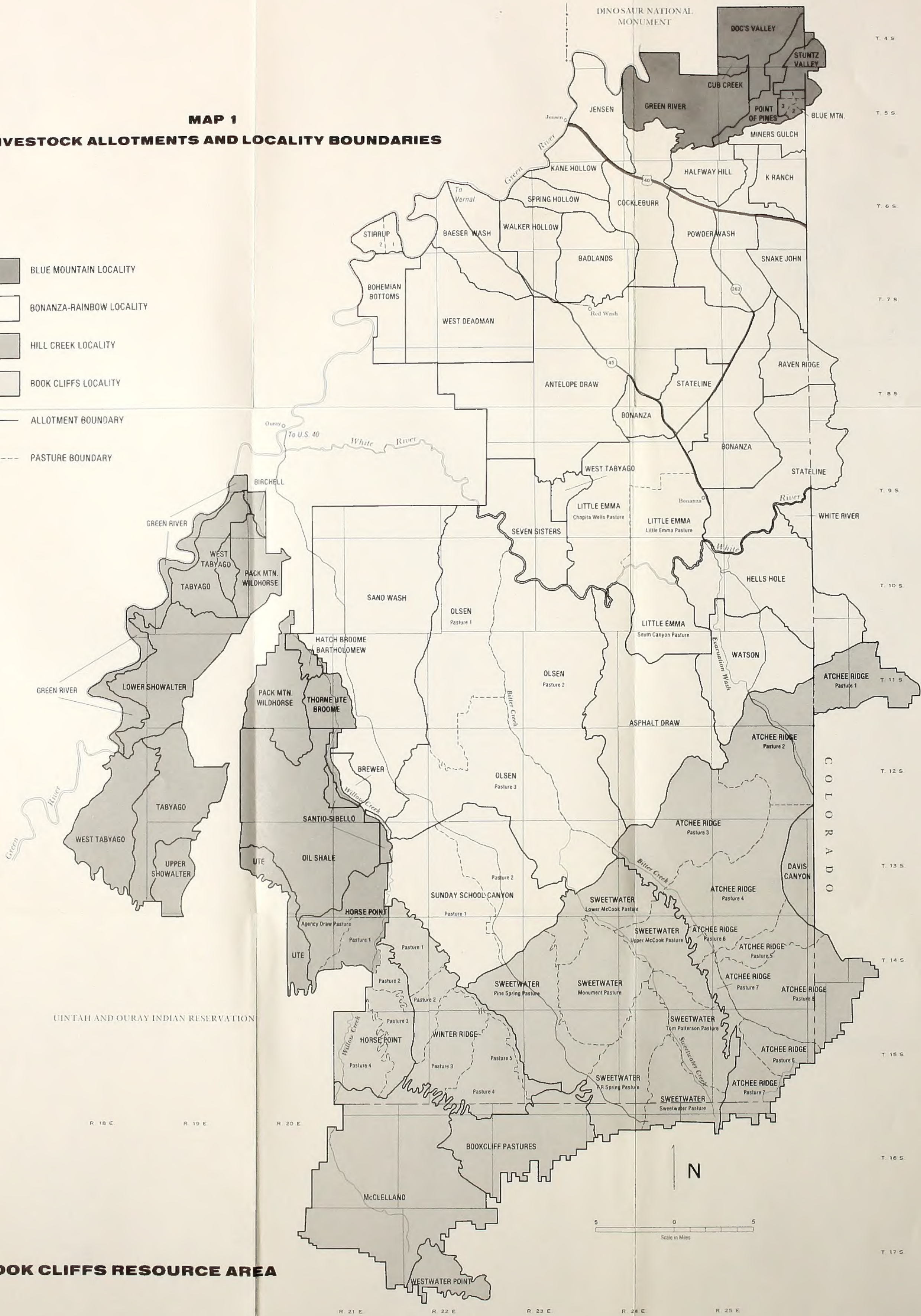


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# **MAP 1** **LIVESTOCK ALLOTMENTS AND LOCALITY BOUNDARIES**

-  BLUE MOUNTAIN LOCALITY
-  BONANZA-RAINBOW LOCALITY
-  HILL CREEK LOCALITY
-  BOOK CLIFFS LOCALITY
-  ALLOTMENT BOUNDARY
-  PASTURE BOUNDARY



**BOOK CLIFFS RESOURCE AREA**



